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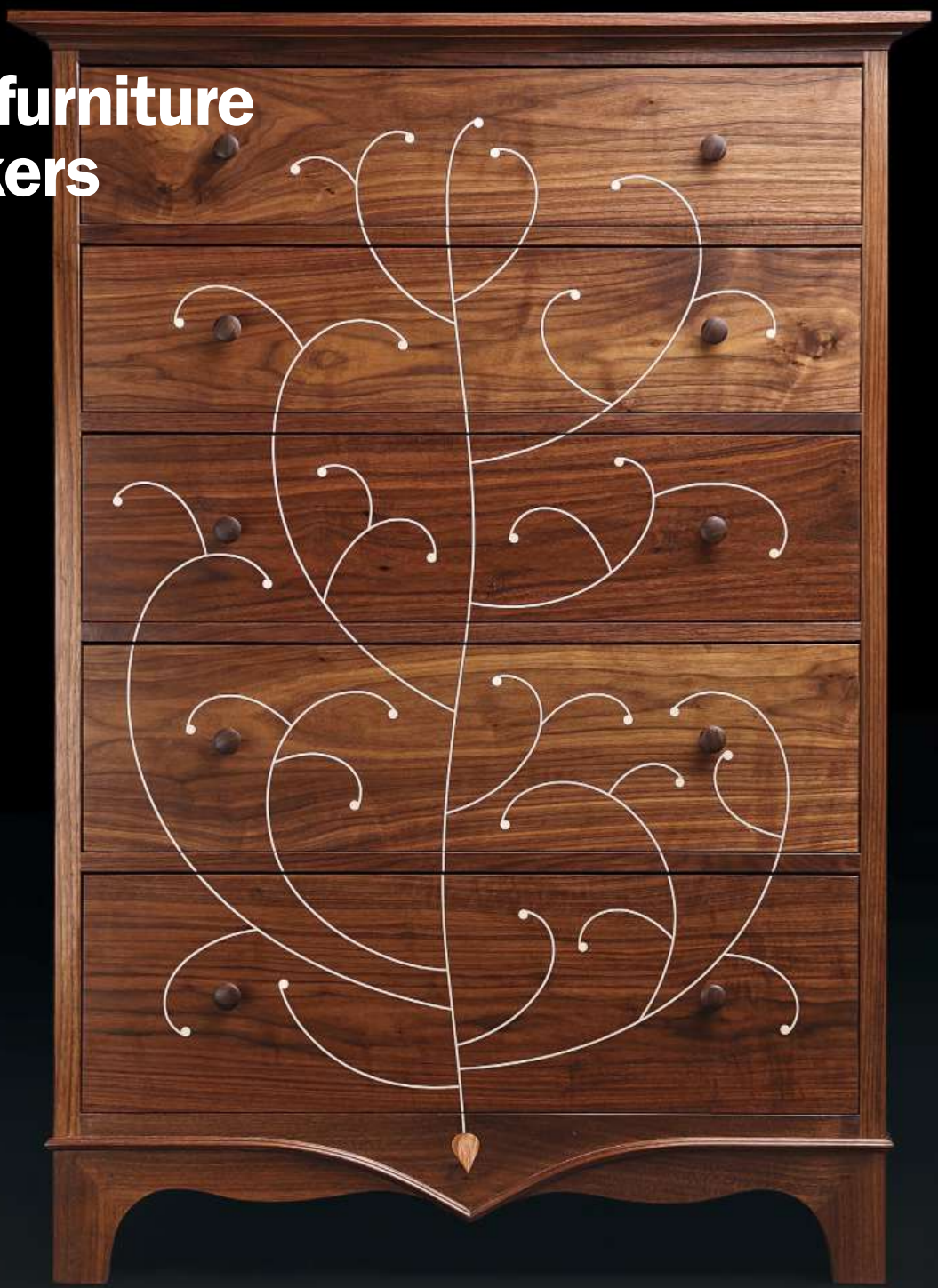
Fine WoodWorking

CELEBRATING 40 YEARS



Cutting-edge furniture by young makers

How to sand the right way

Gap-free dovetails every time

TOOL TEST

Jack planes

Clever approach to bandsawn boxes

Sharpen your own handsaw

PROJECT

Iconic Shaker cabinet gets a face-lift

Dec. 2015 No. 250
www.finewoodworking.com

Tree of Life by Jeremy Zietz, p. 72

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NOVEMBER/DECEMBER 2015 ■ ISSUE 250

CELEBRATING 40 YEARS

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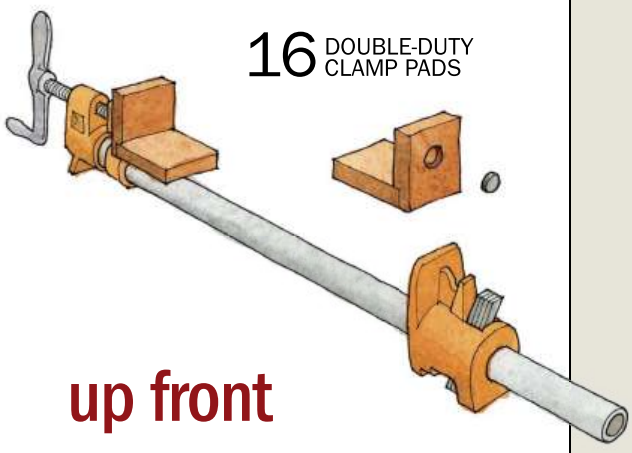

16 DOUBLE-DUTY CLAMP PADS

up front

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features

The Taunton Press
Inspiration for hands-on living®

Cover photo: Jeremy Zietz

in the back

on the web

THIS MONTH ON FineWoodworking.com/extras

Visit our website to access free web tie-ins, available September 30. While you're there, don't miss our collection of free content, including tool reviews, an extensive project gallery, and must-read blogs.

A Shaker Staple

Milk paint is more than just a traditional finish—it's a hallmark of Shaker design. Learn how to lay on a super-smooth coat of this 19th-century staple in our step-by-step video.

Redesigning Furniture Classics

Build beautiful furniture reproductions that aren't beholden to old-world anachronisms. Listen to our in-depth interview with *Fine Woodworking* senior editor Matt Kenney.

Built-in Safety

Today's tablesaws are safer than ever. Learn how to leverage modern safety systems and get the most out of this workshop workhorse.

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Secrets for Better Sanding

Sanding is the single most common surface-prep method available to furniture makers. But there's more to it than simply navigating from grit to grit. Don't miss our top tips for getting the most out of sandpaper, including:

- **Random-orbit and hand-sanding techniques**
- **Using wet-or-dry sandpaper**
- **Sanding between finish coats**

Fine WoodWorking
CELEBRATING 40 YEARS

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Fine Woodworking: (ISSN: 0361-3453) is published bimonthly, with a special seventh issue in the winter, by The Taunton Press, Inc., Newtown, CT 06470-5506. Telephone 203-426-8171. Periodicals postage paid at Newtown, CT 06470 and at additional mailing offices. GST paid registration #123210981.

Subscription Rates: U.S., $34.95 for one year, $59.95 for two years, $83.95 for three years. Canada, $36.95 for one year, $63.95 for two years, $89.95 for three years (GST included, payable in U.S. funds). Outside the U.S./Canada: $41.95 for one year, $73.95 for two years, $104.95 for three years (payable in U.S. funds). Single copy U.S., $7.99. Single copy Canada, $8.99.

Postmaster: Send address changes to *Fine Woodworking*, The Taunton Press, Inc., 63 S. Main St., PO Box 5506, Newtown, CT 06470-5506.

Canada Post: Return undeliverable Canadian addresses to *Fine Woodworking*, c/o Worldwide Mailers, Inc., 2835 Kew Drive, Windsor, ON N8T 3B7, or email to mnfa@taunton.com.

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George Vondriska
WoodWorkers Guild of America
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See George discuss gluing tips and woodworking techniques at wwgoa.com.

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contributors

Michael Cullen (*Beautiful Bandsawn Boxes*) studied mechanical engineering in college and started a career in the field. But the gravity of his family profession must have been too powerful: Before long he quit his job and followed his paternal grandfather and two great-grandfathers into woodworking. He went east to study under English furniture maker David Powell in Massachusetts, then returned to northern California, where he has been building furniture and sculpture since 1990. His current shop is in a former egg-sorting shed in Petaluma, once the egg capital of the country. When not in the shop adding texture to his latest bandsawn box, Cullen can often be spied on his bicycle, carving turns in the spectacular countryside.

Mark Harrell (Handwork: *Sharpen Your Own Backsaw*) owns Bad Axe Tool Works in La Crosse, Wis. He retired from the Army in 2007 after 28 years of service, and says, "what I didn't want to do was go to work for the man." Surfing the web, he realized he wasn't the only one buying low and selling high on eBay to support a growing hand-tool habit, and he began to sharpen saws for a living. That basement business led to Harrell building saws from scratch, and adding employees, mostly military veterans.

Peter Galbert (*Turn a Spindle*) came to wood turning out of a world of flat and square, and liked the sculptural aspect of it and the fast removal of material. He started on a homemade foot-powered lathe, but eventually stepped up to a classic—a 1959 Delta Rockwell 36-in. benchtop model he purchased at an auction. He says the antique model still serves him well: "Stopping to change the belt on the pulleys has become part of the rhythm of my turning. I actually miss it when I use modern lathes."

Jeff Miller (*Tool Test: The Jack of All Planes*) has been building furniture in his Chicago shop for more than 30 years. He combines machine work with extensive hand-tool work in creating his designs. He teaches workshops and seminars across the country, and writes extensively. He is working on a new book on furniture design, and although he has seven terrific workbenches in his shop, he's already planning to build one or two more.

For more information on our contributors, go to FineWoodworking.com/authors.

We are a reader-written magazine. To learn how to propose an article, go to FineWoodworking.com/submissions.

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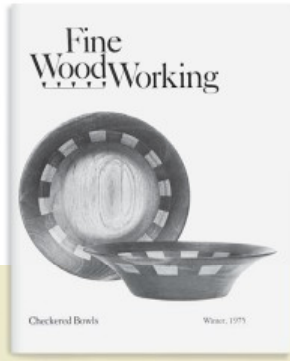
letters

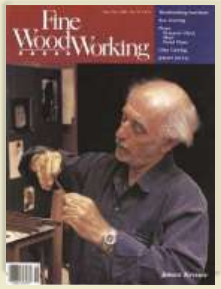
From the Editor



1975

40 YEARS AND COUNTING

In 1975, with the help of his wife, Jan, and a team of expert woodworkers and teachers, Paul Roman's dream of creating a woodworking magazine became reality. The response to issue #1 of *Fine Woodworking* was overwhelming, and the passion and hunger for its valued content has not waned since.



1985

Here we are 40 years later, with those strong roots branching out to deliver solid woodworking information in different, compelling ways. We have a thriving website chock-full of engaging content; we offer digital issues that make the reading experience more interactive; and there's our podcast, which gives our audience yet another way to engage with our staff and experts.

Turning 40 is a big deal in the world of magazines. And we wouldn't be here if it weren't for our readers. So this 40th celebration will be all about you.

1995

As a thank-you to our loyal, passionate readers and online members, we've assembled a prize package of woodworking gear that's sure to make any shop more productive and fun—from bench accessories and tools, all the way up to big stationary machines. The prizes, all from heavy hitters in the industry, have a total value of more than $13,000. The giveaways will happen all year long, but for a chance to win you need to keep an eye on our website, FineWoodworking.com, and on our Facebook page. We'll also launch a few fun contests via our podcast and will unleash some "throwback" features online.

In addition to our online ventures, we're also celebrating in print. This issue has two features that bookmark old and new. In the first, "40 Years of Inspiration" (p. 28), we asked a number of prominent woodworkers to reveal the articles that have most influenced them. On the back end (p. 72), we give a glimpse into the future, with profiles of some talented young furniture makers building a name for themselves. We've also created a special department, called Looking Back, to give you a peek into the past by reprinting classic articles. The department will run all year, and this issue gets us started with Tage Frid's first-ever piece for the magazine (p. 94). Finally, we'll sprinkle some old-time Methods of Work tips into our regular mix. I think you'll get a kick out of those.

2005

Though the prizes and features are sure to wow our readers and members, it's important for me to say thanks to those who help generate the content for *Fine Woodworking*. That includes our authors, illustrators, contributing editors, staff editors, and artists—past and present. It's also important to thank our dedicated sales team and advertisers.

I'm looking forward to the party. I hope you enjoy it.

—Tom McKenna

2015

Readers look back

I am a charter subscriber to *Fine Woodworking*. A while back I had the bright idea of re-reading my issues from the beginning. I'm now up to issue #60 and it has been a very interesting experience.

A few observations:

- The number and variety of advertisements represent a very interesting component of the publication.
- The lively exchange of thoughts contained in Letters, Methods of Work, and Q&A makes for some interesting reading also. It seems perhaps like there was a higher level of "audience participation" then.
- On many occasions, I have had to wonder about what is the latter-day sequel to this story. For example, what is the present status of the special trees created by Axel Erlandson as reported in issue #58 (p. 108)? I think that there are dozens of topics like this that would justify an update. Just an idea ...

—ROBERT SWANSON, Wichita, Kan.

The "Fine" in *Fine Woodworking* increasingly looks like it means "minuscule," as in "fine print"—precisely cut little joints, neatly shaped little details, ingeniously designed little boxes and drawers.

There was a time you showed more vigorous, rugged work. There were wild men with axes hewing whole trees. There were industrial misfits harnessing outlandish machinery. There was the occasional native genius or eccentric tinker. There was scope to the articles, not just refinement. I enjoy most oddities you show. I'm looking for inspiration, not instruction, from your magazine.

—JOHN GIBBONS, Hurley, Wis.

Correction

In *FWW* #249 we printed the wrong price for the Sawstop job-site saw (No. JSS-MCA). The correct price is $1,299.

Fine WoodWorking

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methods of work

EDITED AND DRAWN BY JIM RICHEY

Best Tip

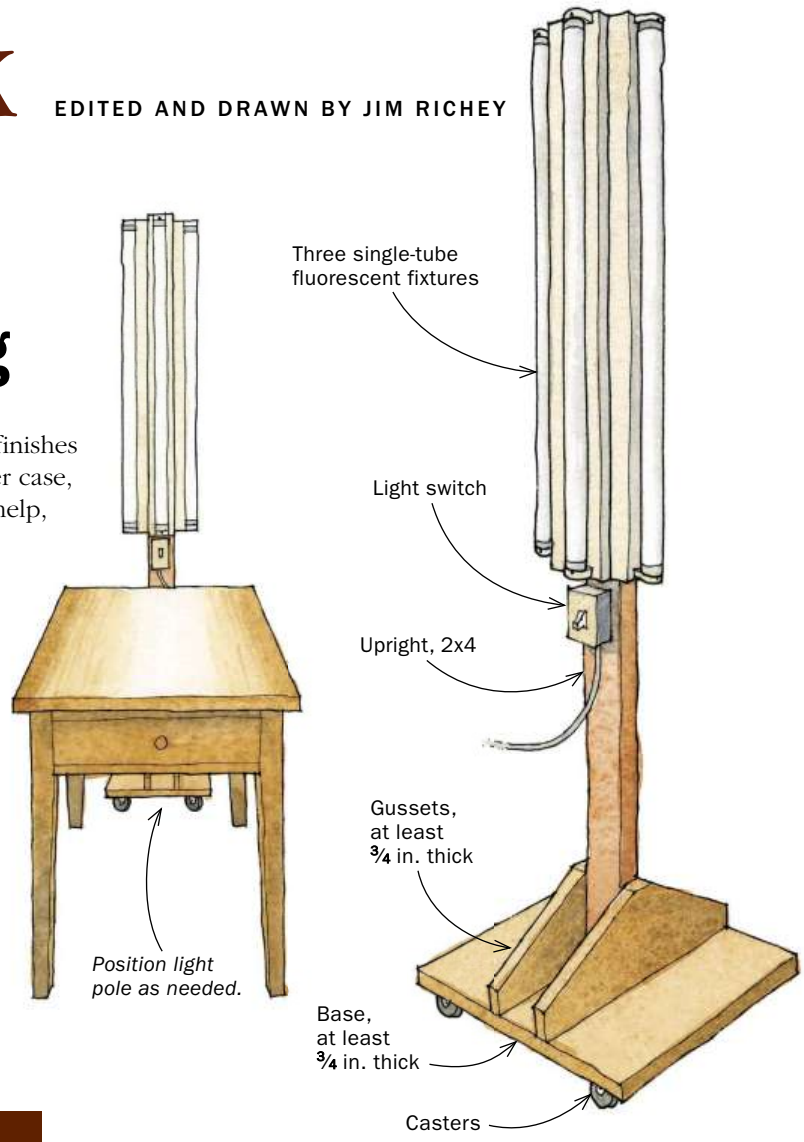
Denny King has been involved in some form of woodworking his whole life. When King retired, he built a new house with dedicated spaces for woodworking, lumber, and finishing. He has produced a wide range of projects there, including a rocking horse for his grandson.

Light pole for better finishing

I use both hand-applied and sprayed finishes on my woodworking projects. In either case, a strong raking light is a tremendous help, letting me see the finish very clearly as it goes on. So I built this movable light pole, which lets me put the light source where I need it.

The setup consists of a base with casters, a 2x4 upright attached to the base with gussets, and three single-tube fluorescent light fixtures mounted on the upright. A regular light switch supplies power. I have used the light pole for more than a year and it has really improved the quality of my finishes.

—DENNY KING, Beverly Hills, Fla.



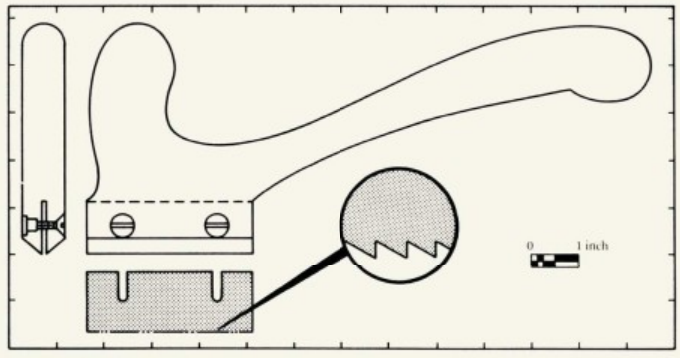
CELEBRATING 40 YEARS

To mark *Fine Woodworking*'s 40th-anniversary year, we'll be re-running some classic Methods of Work tips. This one is our first-ever illustrated tip, from the very first Methods of Work column, issue #5.

Sliding dovetail saw

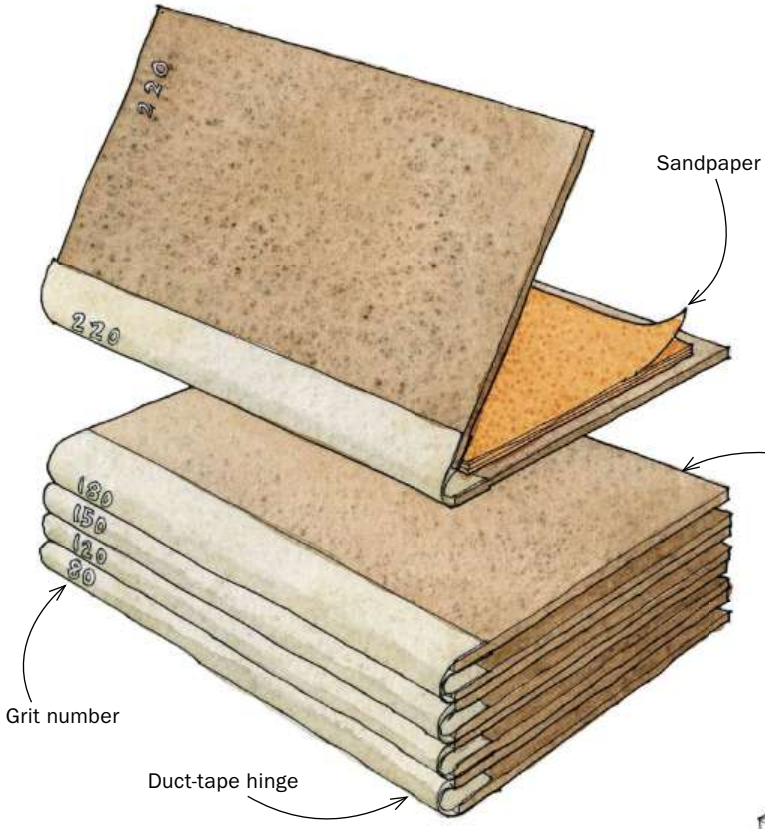
To make a sliding dovetail saw you will need a piece of hardwood (maple, beech, or fruitwood) 1 in. by 5½ in. by 13 in. and two flat-head 3⁄16 by 1-in. bolts with T-nuts. The blade can be an old bandsaw or bowsaw blade. It should have 10 points to the inch, although 8 will do. I use a ripsaw blade, which I find cuts better and faster than a crosscut. The slots allow the blade to be set to the desired depth.

—TAGE FRID



A Reward for the Best Tip

Send your original tips to fwmow@taunton.com or to Methods of Work, Fine Woodworking, P. O. Box 5506, Newtown, CT 06470. We pay $100 for a published tip with illustration; $50 for one without. The prize for this issue's best tip was a Veritas Mk. II Deluxe Honing Guide Set.



Make a sandpaper book

Here's a quick solution for keeping sandpaper flat, organized, and easily accessible. I start with two scraps of high-density fiberboard, 1 in. larger than a whole sheet of sandpaper (or whatever size you cut your sandpaper to). Join the two pieces with a duct-tape hinge, leaving a gap of about 1 in. between them. I use a paint pen to write the grit number on the spine and the cover. The folders stack easily and the weight of the fiberboard keeps the sheets flat.

—WILL NICKLES, Anderson, S.C.

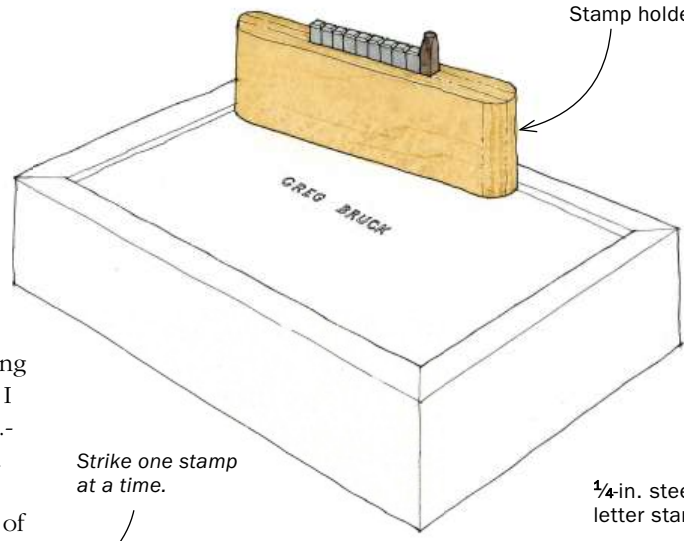
Stamp holder for signing projects

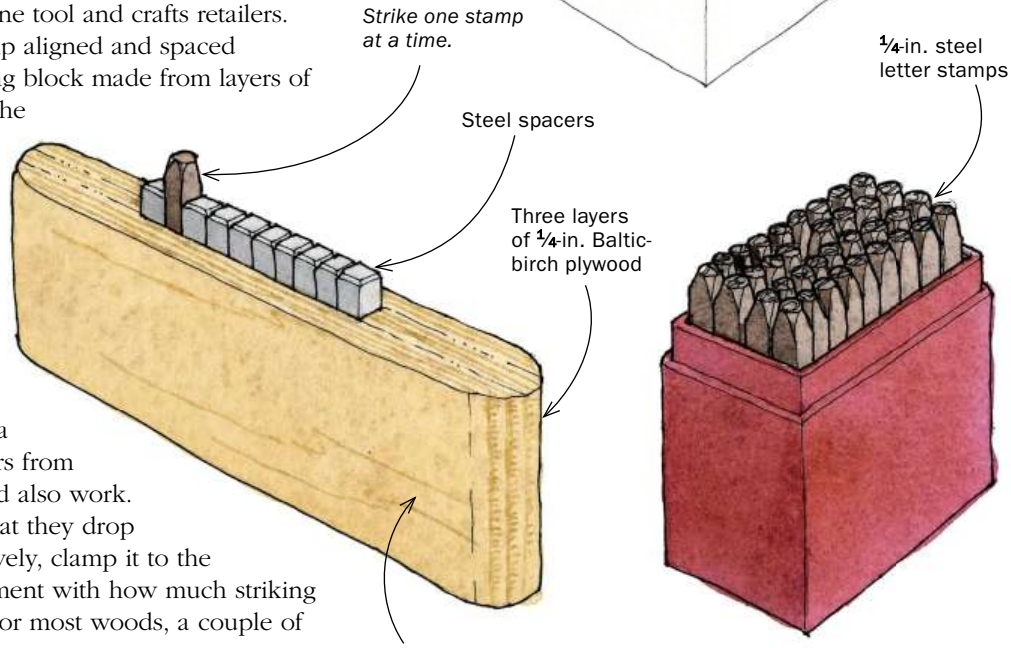
When receiving my work as gifts, family members often ask me to sign the pieces. I know other woodworkers sign their work by carving their initials, using a vibrating engraver or a wood-burning tool. But I decided to use steel letter stamps that I had in the shop. These ¼-in.-square stamps are widely available at online tool and crafts retailers.

The problem is keeping each letter stamp aligned and spaced properly. My solution is this simple holding block made from layers of ¼-in.-thick Baltic-birch plywood. I glued the layers together, leaving a ¼-in.-wide slot for the stamps to slip through. To accommodate the nine letters of my first and last names, with a space in between, I made the slot 2½ in. long. Size yours as needed. Also, if your plywood is a little thinner than ¼ in., you might need to plane solid wood for the center pieces instead.

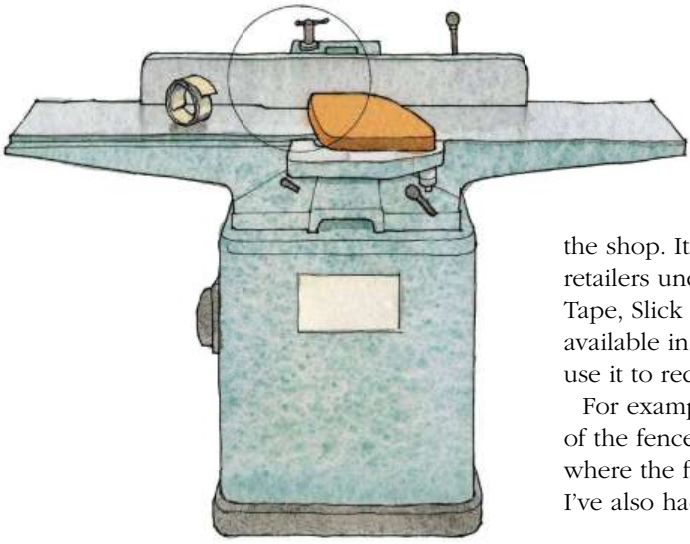
Since you can strike only one stamp at a time, I recommend making shorter spacers from ¼-in.-square steel stock. Hardwood would also work. I chamfered the ends of the spacers so that they drop easily into place. To use the block effectively, clamp it to the project so the letters stay aligned. Experiment with how much striking force is needed to make an impression. For most woods, a couple of light taps is enough.

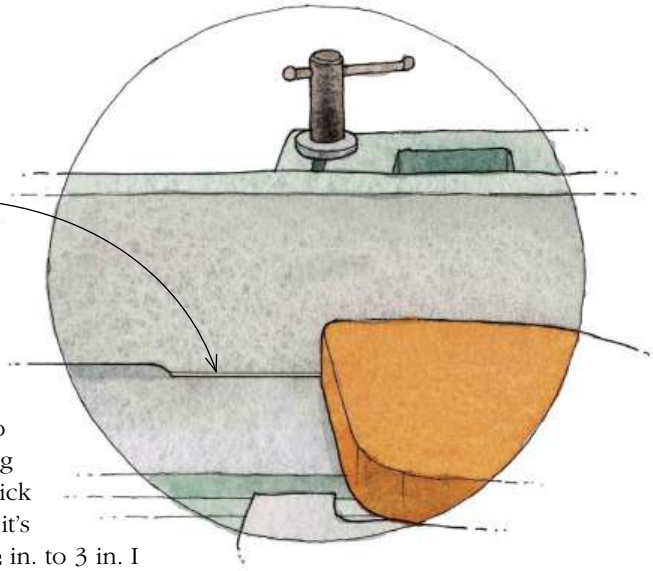
—GREG BRUCK, Bedford, Ohio





Slippery tape has a host of uses





UHMW (Ultra High Molecular Weight) polyethelyene tape is a handy addition to the shop. It is sold at woodworking retailers under the brand names Slick Tape, Slick Strips, and others, and it's available in various widths from ½ in. to 3 in. I use it to reduce friction on tools, jigs, and fixtures.

For example, when tuning up my jointer recently, I discovered that the underside of the fence was rubbing against the bed. I placed a small strip of UHMW tape where the fence touches down, and now it glides effortlessly forward and back. I've also had great results using it under a tenoning jig and a crosscut sled.

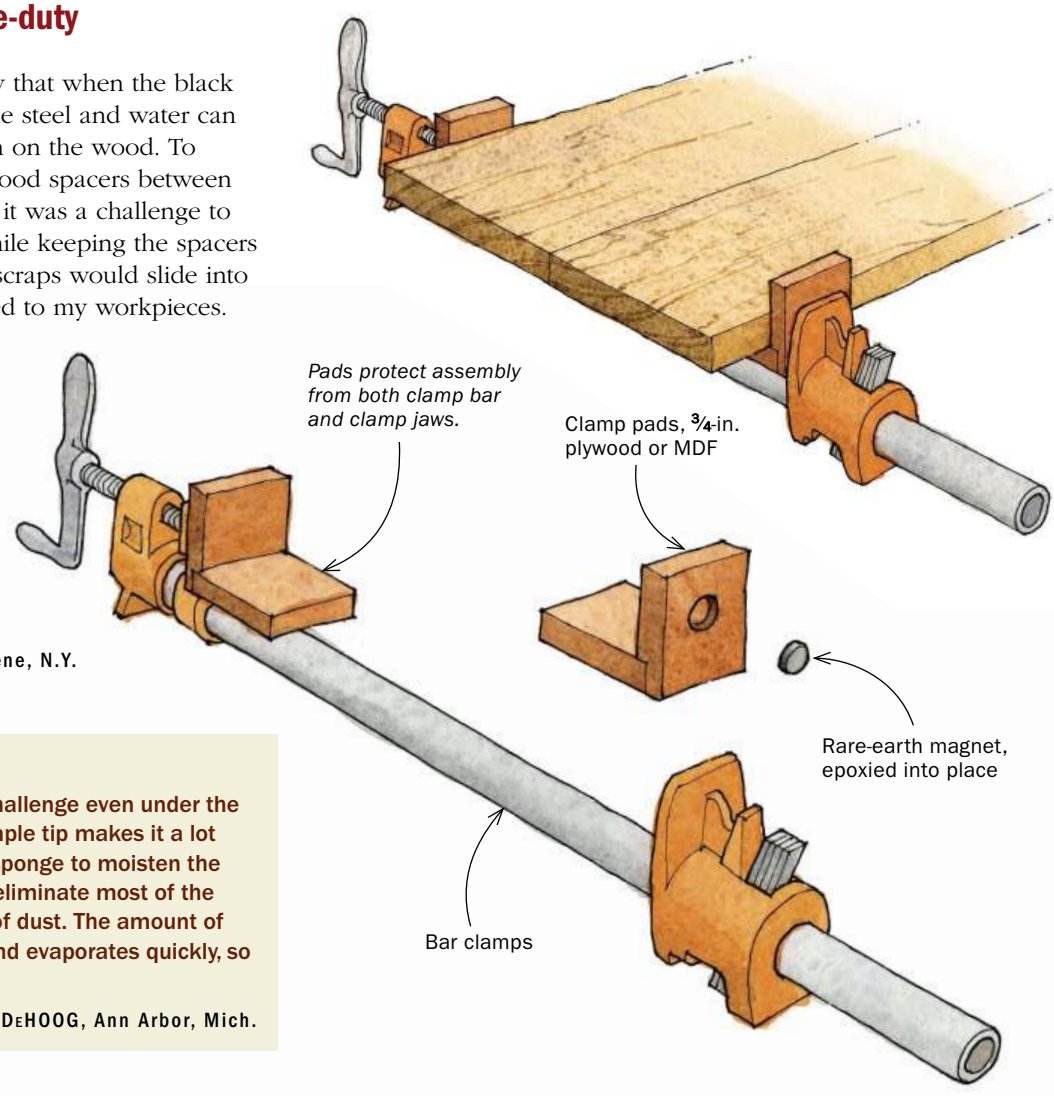
—WILLIE SANDRY, Camas, Wash.

Pipe-clamp pads do double-duty

If you use pipe clamps, you know that when the black pipe touches glue squeeze-out, the steel and water can react and leave a nasty black stain on the wood. To prevent this, I used to insert plywood spacers between the workpieces and the pipe. But it was a challenge to balance and tighten the clamp while keeping the spacers from slipping. In some cases the scraps would slide into the squeeze-out and become glued to my workpieces.

I solved the problem with these simple pads. They employ small rare-earth magnets to hold onto the clamp jaws, leaving my hands free. The pads do double duty: Not only do they space the workpieces off the clamp bars, but they also protect the workpieces from being marred by the jaws.

—JOE WEISS, Greene, N.Y.



Quick Tip

Handplaning end grain can be a challenge even under the best of circumstances, but this simple tip makes it a lot easier. Use a damp (not soaking) sponge to moisten the grain just before planing. You will eliminate most of the chatter, and get shavings instead of dust. The amount of moisture introduced is marginal and evaporates quickly, so it will not harm your handplane.

—JOHN DEHOOG, Ann Arbor, Mich.

tools & materials

Router lift by Dowelmax

$150

ACCESSORIES

Easier access to a table-mounted router

DOWELMAX HAS INTRODUCED A ROUTER LIFT that's a big departure from traditional designs that incorporate the lift mechanism into the insert plate assembly. The Dowelmax system uses a hinged plate that attaches between your router table and its base and opens up like a car hood to gain access to the router for height adjustments and bit changes. This makes it a perfect solution for a fixed-base router that cannot be adjusted from above the table.

A pair of gas-spring struts hold up the table when the lift is open, and support it no matter what size router you have installed.

At just $150, the Dowelmax router lift is an economical alternative to traditional router lifts, especially since it can be retrofitted to your table so you can use the insert plate and router you already have in place.

—Roland Johnson is a contributing editor.

Lift the table to lift the router. *At the heart of Dowelmax's router lift are two plates held together by a long hinge. This allows you to open your router table, gaining access to change bits (above). A pair of gas struts keep the top open, freeing up both of your hands for jobs like accurately adjusting the bit's height (left).*

Veneer glue by Unibond

$20 for 1 quart

VENEERING

Friendly glue for simple veneer jobs

WHEN IT COMES TO VENEERING, the key to success is getting the thin veneer to adhere to its substrate evenly and without moving, or creeping. Otherwise, you end up with gaps between veneer sheets. That's why most experts use adhesives that create a "hard" glueline, where the bond between the substrate and the veneer prevents any creep.

Hide glue and urea formaldehyde glue yield the desired hard glueline, but both have disadvantages, especially for those new to veneering. Hide glue can bleed through the veneer, reactivates with heat, and takes much longer to dry than other glues. Urea formaldehyde glue is preferred by many experts not only for flat panels but especially for complex curves. But it is more expensive than hide glue and requires careful mixing and the use of additives to block bleed-through. And temperature affects its shelf life, pot time, assembly time, and clamp time.

Polyvinyl acetate (PVA) glues, on the other hand, have been unsuitable for veneering because they produce a soft glueline that is prone to creep. But Vacuum Pressing Systems has a new kind of PVA formulated specifically for veneering. Unibond One is a one-part glue that spreads easily, has a long open time, and dries quickly (two hours in clamps is the norm). Best of all, though, it cures to a hard glueline and won't bleed through. I have used it with great success on jobs ranging from simple flat tiger maple panels to four-way "book and butt" matched veneer panels. For everyday, simple veneer glue-ups, Unibond One cannot be beat, especially if you're just getting started in veneering.

—Bob Van Dyke is the founder and director of the Connecticut Valley School of Woodworking.

Photos, except where noted: staff; this page (top two): Roland Johnson

HAND TOOLS

Flush-cut saw won't leave scratches

A FLUSH-CUT SAW IS A MUST-HAVE IN ANY SHOP. They're great for trimming pegs and exposed joinery. The problem with the tools, though, is that they have a thin saw plate that can flex and either dive into and scratch the surface below or rise up, leaving material proud (and defeating the purpose of a flush-cutting saw). Veritas has introduced a flush-cut saw that doesn't dive or lift. Like other flush-cut saws, its teeth have no set. But the Veritas model has a beefier plate that helps the saw cut straight and true, without scratching the surface or leaving extra material that has to be sanded or planed. The teeth are razor-sharp, so it cuts fast. And because it's a pull saw, the blade stays in tension during the cut. It's the best flush-cut saw I've used, and at just $25 it's a good value, too.

—Chris Gochnour, a professional furniture maker in Salt Lake City, is a hand-tool expert.

Smooth cut. *With no set to its teeth and a somewhat stiff saw plate, the Veritas flush-cut saw can cut across a wide stretch without digging into the surface beneath it.*

Flush-cut saw by Veritas

Model No. 05K34.10

$25

Pressure where you need it. *Stretched over an edge-banding, Bandy Clamps spread clamping pressure evenly, ensuring a tight glueline.*

Edge clamps by Rockler

$20 for two clamps

$50 for six clamps

ACCESSORIES

Snappy spring clamps are great for edge-banding

THROUGH THE YEARS, I've used a wide variety of techniques and clamps to glue edge-banding to veneered panels. Jorgensen once made a great edge clamp, but discontinued it years ago, and I've spent countless hours ever since looking for them on the used market. After trying Rockler's new Bandy Clamps, I won't look any more.

At the heart of the clamp is a strong and glue-resistant elastic band mounted in the mouth of a spring clamp. The spring clamp has extralarge swivel pads that grip the surface of the panel while the elastic band stretches tight over the edging. I've used them to glue edging to all manner of panels, from MDF to plywood to panels with melamine faces, and the clamp pads held tight to all of them. One caveat: Dust on the surface can cause the pads to slip, so make sure you clean the surface.

The elastic band applies pressure where it is needed most—along the outside edge of the banding. I have used the clamps extensively and so far the band has withstood the sharp corners of square edge-banding. Bandy Clamps handle edging up to 1¼ in. thick, but still work great on thin banding if you use a caul to spread the pressure over a larger area. All in all, Bandy Clamps are very well designed, useful, and the best solution I've seen for gluing on edge-banding.

—Michael Fortune is a contributing editor.

■ AWFS

Tools that shined under the Vegas spotlight

Every two years, the woodworking industry gathers in Las Vegas for the Association of Woodworking & Furnishings Suppliers (AWFS) trade show, where companies have the chance to debut tools. Here are some that *FWW* surely will test once they are available.

—TOM McKENNA AND MATT KENNEY

BOSCH TABLESAW AIMS TO SAVE YOUR FINGERS

SawStop sent shock waves through the woodworking landscape when it introduced a tablesaw in 2004 with flesh-sensing technology and a blade brake designed to prevent injury. Bosch introduced the first alternative to SawStop. Its REAXX job-site tablesaw ($1,500) is equipped with a flesh-detecting technology that quickly forces the saw's spinning blade beneath the table when the blade makes contact with human flesh. The cartridge that brings the blade down gets two firings, and the brake isn't driven into the blade. Instead, the blade slows to a stop.

MITER PLANE FROM VERITAS

We are living in the golden age of hand tools. It's easy to get an excellent bench plane or chisel, and you can also find just about any specialized hand tool you'd ever need. Now Veritas has introduced another high-end specialized plane. It's a low-angle (12° bed), bevel-up miter plane. With both a rear handle and a front knob, the plane can be used sole down, but you can also turn the plane on its side, attach the included "shooting horn," and get to work at your shooting board. An adjustable mouth allows you to set the mouth opening to match the thickness of the shaving being taken. With an O1 blade, the plane costs $319. Loaded with a PM-V11 blade, it costs $10 more.

18-VOLT DRILL FROM FESTOOL

The C18 is Festool's first 18-volt drill. Its brushless motor is powered by a 5.2-amp-hour (Ah) lithium-ion battery. Like its older sibling, the C15, the C18 is compatible with all five of Festool's FastFix chucks. The drill comes in three different configurations. The C18 Basic, which costs $300, comes with the Centrotec and FastFix keyless chucks.

FORSTNER BITS CAN RUN AT HIGHER SPEEDS

Forstner bits are run at low rpm to prevent them from heating up and ruining the cutters. A new Forstner bit from Colt Tools is designed to combat this problem. Asymmetric chipbreakers machined into the bit's cutting edges create smaller shavings than other Forstner bits, and the chips are discharged faster and easier. The company claims the bits will run faster and longer than other bits without building up as much heat. In addition to the chipbreakers, the bits are unique in that the lead point has a cutting surface that pulls the bit into the cut. The bits are available in diameters from ½ in. to 2¼ in. and range from $27 to $48.

BIG LATHE FROM LAGUNA

Turning big bowls and hollow forms requires a large, powerful lathe, and Laguna's new Revo 18/36 fits the bill ($2,500). It has 18 in. of swing over the bed and 36 in. between centers. Over the banjo, the swing drops to 13½ in., but for outboard turning there's 32 in. of swing. The lathe is powered by a 2-hp, 220-volt motor and has electronic variable speed and digital readout. There are two speed ranges, from 50-1,300 rpm and 135-3,500 rpm. The headstock has a cone shape for easier access to the back of bowls.

Photos, this page: courtesy of the manufacturers

A personal angle on the trestle table

SCALE MODELS AND PROTOTYPES OFFER VIEWS NOT POSSIBLE ON PAPER

BY EBEN BLANEY

Eight years ago, after having built pieces to suit other people's preferences for many years, I set out to find my own furniture style, my own design voice. I'd been frustrated at times when I was asked to build pieces that I thought were overly embellished, so I challenged myself to simplify. For me this didn't necessarily mean complete austerity, but a directness of design in which the visual details of a piece arise from structural and functional requirements rather than being added as pure adornment. This dining table with tilted trestles was one of the first major pieces I built in my quest.

Just before beginning the trestle table, I had made my "wedge" hall table (top right, opposite page), a piece that exemplified the direction I wanted to go with my work. The design of the hall table, with its radically angled plank leg, was prompted by my experience working on timber-frame structures: In those buildings, filled with vertical and horizontal lines, the angled bracing had an exciting visual power, a kind of arrested energy. I hoped that the hall table could provide a similar jolt when placed in a typical rectilinear room.

When it came time to design the dining table, I began thinking about trestle tables. I had built a few in the traditional Shaker manner—legs connected by a knee-high stretcher and secured with tusk tenons—and admired the structure. As I began drawing to explore a different approach, I had my hall table in mind, and I tried tilting the trestles outward. That created angles and openings that I immediately responded to. At the same time, I lowered the stretcher to the floor, and I liked the airy expanse above it and the more minimalist appearance that resulted.

I laid out a trestle full scale on a piece of ¼-in. MDF to find what I thought was an attractive angle of lean. Then, using solid wood and hot glue, I made a quick ⅛-scale model so I

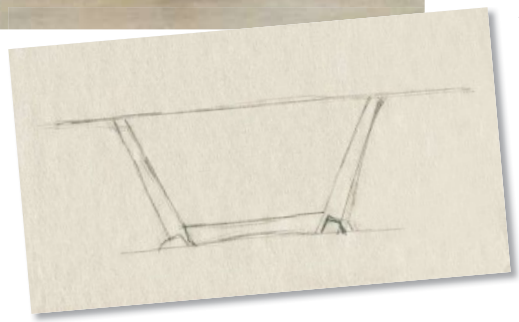
Evolution of an idea

Eben Blaney's leaning trestle dining table (left) sprang from his earlier hall table (above), adopting its angularity and its pared-down elemental style. When he designed a second dining table (below), he borrowed the tilting trestles but pushed the design in a different direction with heftier components and a prominent arched stretcher.

Photos, except where noted: Jay York

designer's notebook continued

Dialing in a design



Space at the table. *When Blaney began drawing to explore the idea of a dining table with tilted trestles, he was attracted by the trapezoidal negative space between the trestles, the tabletop, and the floor-level stretcher.*

The proof is in the prototype. *Having made an initial scale model, Blaney followed up with this prototype in red oak to test the concept at full size. It convinced him that he had the overall angles right, but that the plank trestles needed more mass.*

Common scale. *Blaney builds ⅛-scale models to see his emerging designs in three dimensions. Using solid wood and working fairly quickly, he joins them with hot glue and leaves out fine detail.*

could see the overall form in three dimensions. I liked what I saw, but there were details that I couldn't resolve on paper or in the scale model, so I decided to build a prototype out of some red-oak lumber I had on hand.

As I built the prototype, one challenge I confronted was the feet. Like the feet of a more standard trestle table, they needed to be long and large enough to provide stability and strength at the connection to the uprights. But I wanted them to have a sleek profile and to express some of the slanting action of the trestle. If I angled the top face of the foot so it was perpendicular to the leg, it looked fine from one angle but rather clumsy from another. I needed to do some exploring full-scale, so I milled up softwood blanks and began shaping and sculpting sample feet with a handplane and a spokeshave. After several attempts, I arrived at a solution I liked, a combination of curves and sloping transitions along the length of the foot and a compound angle at the ends.

As I completed the prototype, I was satisfied with the feet, but in relation to them the single-plank uprights lacked sufficient visual mass. To remedy the problem, I decided to try framing the planks with pairs of legs. I borrowed the shape of the legs, with their inverted taper, from the hall table. Rather than rebuilding the prototype, I made a second scale model. Liking what I saw there, I did another full-scale drawing and worked out the details of the connections.

Then the rest of the design decisions started to fall into place. I captured the stretcher between the feet, making the connection with mortise-and-tenon joints and angling the stretcher's ends to match the slope of the inside face of the foot. I suspended the stretcher about ½ in. off the floor and heavily beveled the top edges where some contact from shoes was inevitable. I also beveled the underside of the top to enhance the effect of airy lightness.

I was happy with the way the leaning trestle table came out, but when I got a commission for another dining table, I pushed the concept further. In the new table (previous page, bottom right) I used tilted trestles but added an arched stretcher, beefed-up components, and exposed, interlocking joinery. A much larger top—4 ft. by 8 ft.—allowed me to increase the scale of the legs and eliminate the panels between them. I tapered the inside faces of the legs to enliven the negative space they framed, and extended the curved stretcher so it passed between them. With this table too, I made drawings and a model and worked out the sculpted feet in lumberyard softwood before going "live" with walnut. □

Eben Blaney builds custom furniture in Edgecomb, Maine.

Photo, bottom left: Jonathan Binzen

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40 Years of Inspiration

How *Fine Woodworking* influenced generations of woodworkers

BY STEVE SCOTT

Fine Woodworking magazine debuted in the winter of 1975, after founders Jan and Paul Roman sent postcard invitations to 20,000 potential subscribers. Four decades later, the impression the magazine has made on the craft is clear—and everlasting. *Fine Woodworking* has fostered a creative community, preserved and advanced a craft, inspired and taught everyone in it.

"I remember waiting with anticipation to see what the first issue was going to be all about," recalls period furniture maker and teacher Phil Lowe. "Here you had this publication that was sort of letting the trade secrets out. It has played a tremendous role in keeping the craftsmanship alive."

The magazine also became an important showcase, creating a common awareness—that hadn't existed before—of what was current in the craft.

"I love seeing what other people are doing," said furniture maker Hank Gilpin. "What are the different minds in different parts of the country developing and creating, and where is their inspiration?"

To celebrate *Fine Woodworking*'s 40th anniversary, we asked many of our most noteworthy contributors to tell us what reading the magazine has meant to them, and to share their favorite article. Taken together, their stories are like pieces in a marquetry pattern depicting the magazine's influence.

Online Extra

Read the original articles that inspired our contributors. They're available free for a limited time at **FineWoodworking.com/extras.**

FWW #3—the whole issue

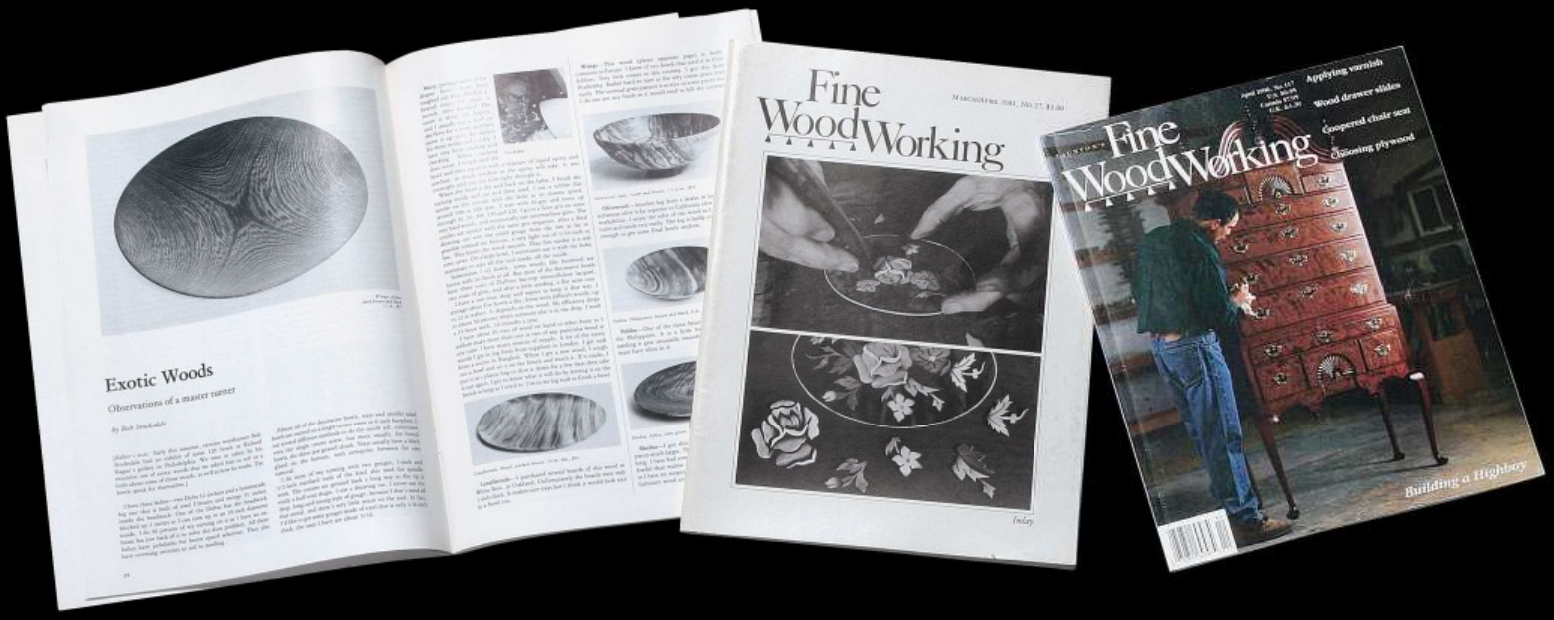
Garrett Hack is a man of many pursuits: furniture maker, author, teacher, gentleman farmer. So it's no surprise that he would choose more than one favorite article. He instead chose an entire issue—#3. The issue's table of contents reads a little like a lineup card for the '27 Yankees, stacked with some of woodworking's heaviest hitters: Tage Frid, R. Bruce Hoadley, and Jere Osgood among them. Frid's article on mortise-and-tenon joinery is one that Hack still uses in his teaching.

"I always admired the way he wrote quite simply about things," Hack said, recalling some of the article's lessons: "Don't use four shoulders around a tenon. Keep your tenons as wide as possible. Angle the tenon instead of the mortise.

"That's lasting stuff."

Hack also took heart from Osgood's article, which celebrated and commented on the furniture craftsmanship then being practiced in the Northeast. At that time, in the summer of 1976, Hack had done some woodworking in school and recalls that he was beginning to weigh the role that the craft might play in his future. In hindsight, he said, *FWW* #3 may have helped tip the scales. "The following year, I applied to a program in artistry which Jere Osgood was running," he recalled. "So that was in some ways the first step."

Photos: Michael Pekovich



Exotic Woods

BY BOB STOCKSDALE, FWW *#4*

Hank Gilpin says, "I started out as a furniture maker, but then I became a wood guy." His Rhode Island shop supports that claim, holding thousands of board feet from a huge variety of domestic species. Over the years, it is the "wood" in *Fine Woodworking* that has captivated him most.

"I go 'wow' when I see a picture of end grain, and glaze over when I see a dovetail," he said. "Without a doubt, the most valuable and interesting and direction-changing articles for me were the articles on wood."

Early in his career, Gilpin decided to work only in domestic species—to save money. So it's ironic in some ways that the article he remembers most clearly was titled "Exotic Woods." Renowned turner Bob Stocksdale introduced nearly two dozen species, noting each wood's origin, color, texture, and working properties.

But more than the particulars about the wood, Gilpin was struck by the author himself, and the depth of his knowledge. "He discussed each wood with a kind of intimacy that really impressed me," Gilpin said.

That article, along with others by R. Bruce Hoadley and, later, by Jon Arno, helped deepen Gilpin's appreciation for the material.

"I've worked in more woods than anyone you know," he said. "Those articles are what got my eyes open."

Inlaying Mother of Pearl

BY RICHARD SCOTT NEWMAN, FWW *#27*

Steve Latta's woodworking career began in a bicycle shop. In the mid-1970s, Latta was an undergrad student at Ohio University with a part-time gig truing wheels, replacing brakes, and adjusting shifters.

One day, "I overhauled a local furniture maker's bike. He thought I might be good with my hands so he offered me a job." Latta accepted and swapped one set of tools for another. "I took to wood really easily. I just went with the flow and it has worked out well."

I've said it before, you can teach yourself the craft in the pages of *Fine Woodworking*, and I really stand by that.

And in that Athens, Ohio, cabinet shop, "everybody read *Fine Woodworking*," Latta recalled. "It was everywhere."

Latta was drawn to early articles by Silas Kopf and others, but specifically remembers being challenged and inspired by the work of furniture and instrument maker Richard Scott Newman. "With Richard's stuff, I didn't know how he did it," he said. Latta points to an article on Newman's work titled "Inlaying Mother of Pearl" as introducing him to the world of decorative inlay—a technique that's central to his own work.

"There is a 100% direct correlation between seeing his work and what I do now," Latta said, "I just don't do it as well as he did."

Curly Cherry Highboy

FWW *#117, #118, #119*

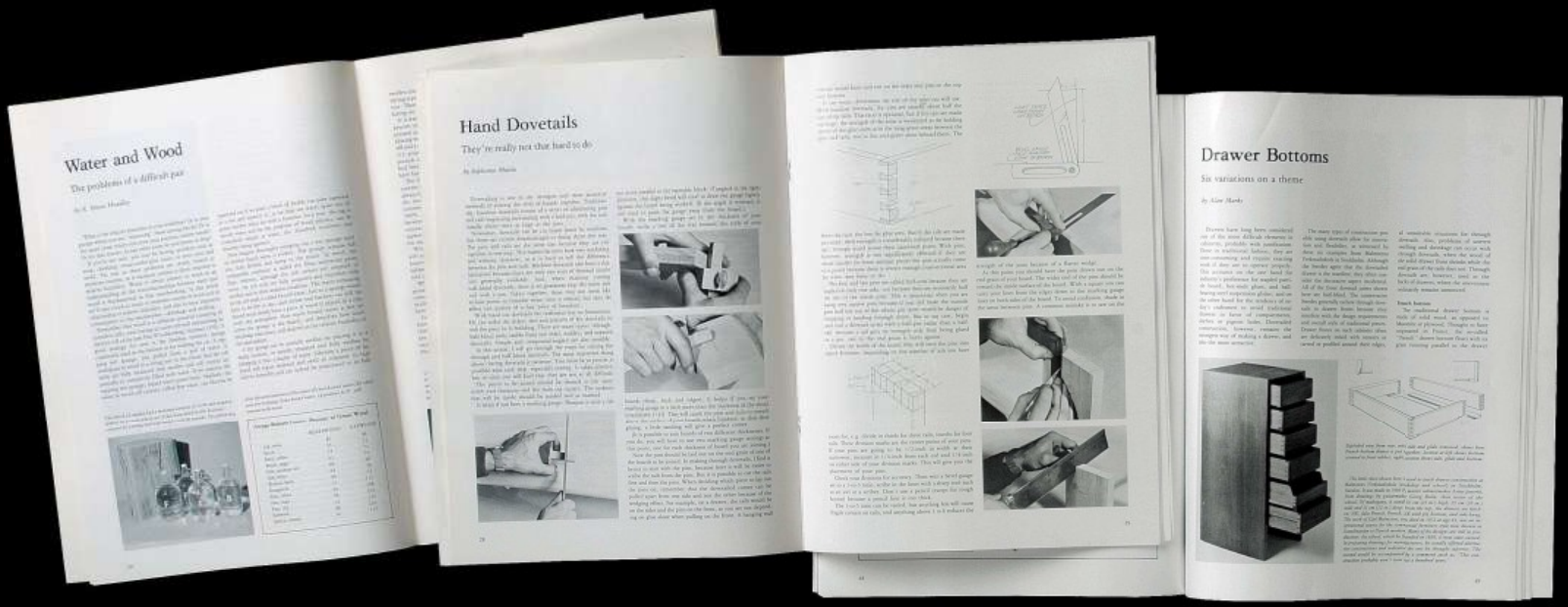
In the mid-1980s, **Chris Gochnour** was waiting tables at a Salt Lake City restaurant with a brand new English degree and no idea what he was going to do with it.

Woodworking seemed like an option, although apart from a shop class in high school he was largely self-taught.

"I really had no instructors, except for *Fine Woodworking* and books," he said. "I just would go to the library and get books and books and books on woodworking. I've said it before, you can teach yourself the craft in the pages of *Fine Woodworking*, and I really stand by that."

Gochnour recalls a series of three articles in issues 117 to 119 by Randall O'Donnell, a comprehensive how-to on the construction of an early American highboy in curly cherry. Gochnour admired the thoroughness of the presentation, and O'Donnell's smart blend of machines and hand tools. But what struck him most was how the article made a gargantuan undertaking seem approachable.

"When you look at the whole, it can be daunting and overwhelming," Gochnour said. "But this article breaks it down into manageable components. It gave me confidence in handling larger commissions."



Water and Wood

BY R. BRUCE HOADLEY, FWW *#4*

Christian Becksvoort is the prototype for a solo craftsman. With a house in rural Maine and his shop just steps from his back door, he builds pieces of his own design based on the Shaker furniture he admires most. But at the start of his career, he spent time working in other people's shops, fixing other people's mistakes.

The shops would build solid-wood case pieces with interior web frames glued into place in all four corners, he recalled. "The sides would shrink and the web frame would not," leading to split case sides and unhappy customers. When he started on his own, he was determined to avoid those sorts of headaches.

"Working alone, you really don't want your pieces ever coming back (for repairs)," he said. "That's not a paying proposition."

In his effort to build pieces more intelligently, he found an ally in R. Bruce Hoadley and his early articles on the material properties of wood. He especially remembers Hoadley's piece titled "Water and Wood."

"Those articles got me going on my favorite rant, which is wood movement," Becksvoort said. Using his own experience and Hoadley's teaching, Becksvoort began designing his own pieces with seasonal wood movement in mind. "In 35 years, I've never had a piece come back," he said.

Hand Dovetails

BY ALPHONSE MATTIA, FWW *#2*

Jim Richey has edited and illustrated the magazine's Methods of Work column for 38 years. His favorite article is "Hand Dovetails" by Alphonse Mattia.

"I'd been a carpenter all through college, put myself through college building houses, but I'd never done anything like joinery by hand," he said. "That was just a revelation to me, and it was a very clear article, with very clear photographs and illustrations and lots of little tips like angling the tip of your marking gauge. Lots of little things like that."

After reading the article, Richey said, he tooled up. He mail-ordered a dovetail saw from Woodcraft, sharpened his carpenters' chisels, and "I ended up making an elegant little marking gauge just for dovetails, which I still have," he said. "And I still have that original dovetail saw."

"Dozens of pieces of furniture later, I still enjoy that chop chop chop and tap tap tap. It really did change the way I approach projects and woodworking."

Drawer Bottoms

BY ALAN MARKS, FWW *#9*

"I consider myself to be a *Fine Woodworking* baby," said contributing editor **Michael Fortune**. He trained to be a commercial furniture designer, a background that taught him how to operate at production scale. He credits the magazine with teaching him to work as a solo craftsman.

"A lot of what I know has been gleaned and adapted from various articles in those early years," he said. "Even to this day, I go through every issue and there is something that I incorporate."

The strongest example, Fortune said, is an article by Alan Marks titled "Drawer Bottoms." The article pointed Fortune to the NK system of building drawers with bottom-mounted wooden slides that reduce friction while ensuring that the drawer travels squarely inside the case. "It's just such a wonderful way to make drawers," Fortune said. "I've used that countless times, and I've referred students to the same article."

In his effort to build pieces more intelligently, Becksvoort found an ally in R. Bruce Hoadley and his early articles on the material properties of wood.

Boston Bombé Chest

BY LANCE PATTERSON, FWW *#45*

Miguel Gómez-Ibáñez, president of North Bennet Street School, says it is not really possible to squeeze the construction of a bombé chest into a five-page magazine article. There is just too much to relate, from the ball-and-claw feet to the serpentine front to the cock-beaded drawers.

But back in 1984, Lance Patterson—an instructor at NBSS then and now—gave it his best. The article, "Boston Bombé Chest," has since become required reading at the school.

The article does not take readers through the chest project step by step, but offers clear descriptions and drawings of several key components, including the shaped drawer fronts and the tapered drawer boxes.

"It's not only unique, but important for somebody to have written that stuff down," Gómez-Ibáñez said. "*Fine Woodworking* really did a wonderful thing in being the vehicle to document this piece of work. It's the definitive article on bombé furniture."

Gómez-Ibáñez said he's never built the chest himself, but has used many of the techniques that Patterson demonstrated in the article. "It's something I've returned to many times," for reference on a variety of projects, Gómez-Ibáñez said. "There are a lot of issues like the tapered box construction that so befuddle me that I have to reread it every time I do them."

Curved Slot-Mortise and Tenon

BY BEN DAVIES, FWW *#26*

Marc Adams, owner of the nation's busiest woodworking school, began reading the magazine in the late 1970s as a young cabinet shop owner desperate for guidance.

"I had never taken a woodworking class and I had never taken a business class," Adams said. "I was one of those guys that just was starved for information … reading *Fine Woodworking* cover to cover and trying to get everything I could out of it."

For a youngster like me—I was 24—you're just soaking up as much information as you can and trying to figure out your own path.

Among the articles that stuck with him was a piece by Ben Davies titled "Curved Slot-Mortise and Tenon," which describes how to execute a mortise-and-tenon joint in curved work.

Adams said he has incorporated the curved mortise-and-tenon repeatedly through the years, most notably in the design of a document box that his students make each year for a charity fund-raising event.

"I'm always after the unique things," Adams said. "I was always looking for a detail in the joinery or a detail in the process that could change my work."

Profiles of craftsmen: Wharton Esherick, George Nakashima, Art Carpenter, and others

Many readers recalled that, in its early years, the magazine reached a far-flung group of solitary craftsmen and turned them into a community.

"We didn't even know each other existed because we all hid out in our shops," said former contributing editor Gary Rogowski. "It's a bit isolated."

The magazine helped woodworkers to connect, broaden their horizons, and learn.

"I would just eat these magazines up," he recalled. "For a youngster like me—I was 24—you're just soaking up as much information as you can and trying to figure out your own path."

The articles Rogowski was drawn to most were the profiles of solo craftsmen such as Wharton Esherick, George Nakashima, or Art Carpenter. The articles were a winning combination of inspiration and practical advice. "You could get a little philosophy, but also see the work," he recalled. "I loved those articles."

Sam Maloof

BY RICK MASTELLI, FWW *#25*

Mastelli describes Maloof's transition from home-shop hobbyist to the country's most popular and successful custom furniture maker.

Roland Johnson found *Fine Woodworking* in an unlikely place.

"I vividly remember the day that I found (*Fine Woodworking*'s) Biennial Design Book in a hippie hardware store in St. Paul," he said. "It just took the top of my head off; I'd never seen stuff like that."

The discovery came as Johnson was trying to launch his own woodworking career in a small shop near the Twin Cities. "I bought all the back issues of *Fine Woodworking* and subscribed to it, and that's where I learned all my woodworking."

One article that stuck in Johnson's memory was Rick Mastelli's 1980 profile of Sam Maloof. In it, Mastelli describes Maloof's transition from home-shop hobbyist to the country's most popular and successful custom furniture maker.

"Sam was instrumental in inspiring me," Johnson recalled. "He talked about getting started and starting from nothing. He was approaching middle age before he really got going on woodworking."

Leaded Glass Made Easy

BY MICHAEL PEKOVICH, FWW *#211*

Over the years, *Fine Woodworking* has introduced readers to a wide variety of allied crafts, from upholstery to hardware making to Japanese paper. Skills and materials like these aren't part of every project, but they add an important dimension to the work.

As an example, Nancy Hiller points to Michael Pekovich's article in issue #211 on making leaded-glass panels. The Master Class was a companion piece to his article on building an Arts and Crafts display cabinet. "He made it look do-able," she said. "He broke down the process into a methodical series of steps and he gave all of the necessary information about the tools and materials one would need."

Hiller, a Bloomington, Ind., furniture maker who specializes in Arts and Crafts designs, said her first attempt took much longer than she expected.

"It started out being frustrating and daunting, but by the end of it I was elated because I had a new skill, at least at a rudimentary level."

A Chair Maker's Workshop

BACK COVER, FWW *#153*

The magazine's profiles of individual furniture makers left the deepest impression on Mario Rodriguez as an aspiring craftsman. "They explored the things that inspired those people and motivated them and encouraged them to go on," Rodriguez said.

One such piece, the back cover of issue #153, profiled Windsor chair maker Curtis Buchanan. "Here's a guy banging out maybe three or four chairs a month, doing a little teaching, a little writing. With a lot of hard work and a little luck, he's placed himself in a very unique situation. If somebody is daydreaming about making a living as a woodworker, they are daydreaming about Curtis's life."

Also influential for Rodriguez was an article he read as a young apprentice carpenter titled "In Search of Period Furniture Makers" (*FWW* #23) by Rick Mastelli.

"He went around New England and contacted people who were building meticulous reproductions," Rodriguez recalled, "and these guys were incredibly open," about their work. "Here was this very diverse set of guys who were making it. I found that article to be very encouraging."

Gluing Up

BY IAN KIRBY, FWW *#31*

Bob Van Dyke, director of the Connecticut Valley School of Woodworking, discovered *Fine Woodworking* not in a shop or lumberyard, but on his dad's reading table.

On visits to his parents' home, "I'd see his black-and-white *Fine Woodworking*s sitting out, and I started reading them," Van Dyke recalled, "and then I started stealing them from him." At the time, Van Dyke was a restaurant chef and hobbyist woodworker. He eventually switched careers and got his own subscription, not necessarily in that order.

He said articles by Tage Frid and Ian Kirby left the deepest mark on him. In particular, he recalled Kirby's article titled "Gluing Up." The article is filled with practical advice, leavened by Kirby's dry wit. "A common lament in woodworking," he notes, "is that 'everything went perfectly until glue-up, then everything went wrong.'"

Portions of that article still make their way into Van Dyke's lesson plans at Connecticut Valley. "When I do the fundamentals class and we're gluing up the 46-in.-long tabletop for the hall table, I refer to Ian's article and how the clamp exerts 45° of pressure from the centerline. I remember there was a diagram in the article, and I basically draw that diagram on the tabletop that I'm demonstrating the glue-up on."

Furniture construction series

BY WILL NEPTUNE, FWW *#130, 138, 163*

Count **Dan Faia** as another North Bennet Street School instructor whose favorite article was penned by one of his own teachers. In the classroom, Faia recalls, Will Neptune had a gift of gauging just how much new information his audience could digest.

"He was a high-energy guy, but he could handle a beginner without intimidating you," Faia recalled, "and he could also deal with a master."

That trait shines through in a series of four articles Neptune wrote in the mid-1990s on basic furniture construction. The articles "had nothing to do with what the piece looked like," Faia said, "they had to do with how it was built."

The first, titled "Engineering a Table with Drawers" (*FWW* #130), describes a design that Neptune said is "endlessly adaptable" and can be used to build everything from a desk to a Shaker nightstand to a Pembroke table.

"It's very technical, but there's no misunderstanding of the information," Faia said. "It's very clear and concise."

Neptune later laid out the same basic approach for sideboards (*FWW* #138) and chests of drawers (*FWW* #163).

Making Music with a Plane

BY JAMES KRENOV, FWW *#126*

Jennifer Anderson, a woodworking instructor at Palomar College, studied under James Krenov toward the end of his career at College of the Redwoods, so it stands to reason that her most vivid *Fine Woodworking* memory involves him.

Anderson was just a few months away from starting classes at Redwoods in the late 1990s when she found issue #126 on the newsstand.

"I grabbed the magazine because JK was on the cover," she said. In his article, "Making Music with a Plane," Krenov writes in general terms about the joys of making and working with wooden planes and how they afford "a flexibility that relates to the kind of person you are and the kind of work you do."

Krenov's article is followed in the same issue by Redwoods instructor David Welter teaching readers how to make their own wooden plane.

Anderson refers her students at Palomar College to both articles to learn more about making their own planes.

"You don't have to be an engineer to make really sweet work," she said, "And these tools are basically the vehicle, the way that you do it."

The Enfield

An iconic Shaker cabinet

I've long admired the clean lines and simplicity of an iconic cupboard made at the Enfield, Conn., Shaker colony. When I decided to build one for my house, I altered the design to make it better suited for its intended use: a place for my wife's sewing supplies. The biggest changes are the two interior drawers I added and the narrower face frame stiles that create a larger opening to improve access.

I also made the cupboard out of hard maple instead of the eastern white pine used in the original. The door panels are curly maple. I painted the drawer fronts with blue milk paint, giving them a modern pop that's rooted in tradition (the Shakers were fond of bright colors).

This cupboard is not difficult to make but there are a few challenges, including how to dovetail a big case. The sides are tall, so I had to figure out a sure way to hold the subtop so that I could transfer the tails to the sides and rout out the pins. I'll show you how I did that, as well as how I dealt with all of the other little construction twists that make this a fun piece to build.

Begin with the case joinery

The first order of business is the dovetailed case. I cut the tails in the subtop at the bandsaw. To help cut out the pins on the tall case sides, I used an L-shaped jig. I used the same jig to rout the pins. I set the depth to

Article Extra

Watch our interview with Matt Kenney on designing furniture reproductions.

Photos, this page: John Tetreault

Cupboard, Updated

gets a face-lift

BY MATT KENNEY

the baseline of the pins and just followed the layout lines by eye. After this, paring the pins to fit was quick.

After I fitted the dovetails, I used the tablesaw and a dado set to cut the through-dadoes for the shelves. The dadoes will be hidden in front by the face frame.

Now rabbet the back of the subtop and sides for the back panel. I used the router table and a rabbeting bit. The top rabbet is stopped at the dovetail baseline to avoid compromising the joint. On the sides, the rabbet can go straight through the foot end because the stiles on the back extend to the floor.

Shape the feet and assemble the case

I used a template to make the feet identical. First, I used it to trace the foot profile on the side, then roughed out the shape at the bandsaw. I used the same template and a flush-trimming bit to clean up the cut at the router table. Then I squared the two corners with a chisel.

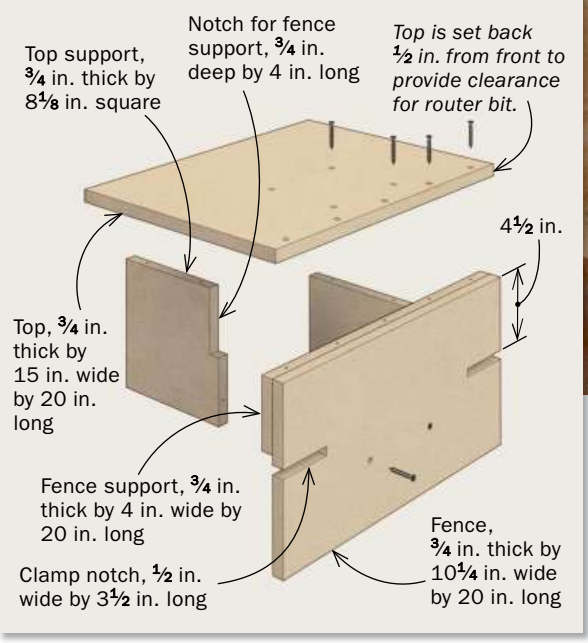
Now make and fit the case bottom and shelves. Set aside the shelves until later. Glue up the case and as soon as the clamps are on, measure the diagonals to ensure that the case is square. If it's not, loosen the clamps, square the case, re-clamp, and measure again.

Attach the face frame

The face frame is simple to make. The top rail is joined to the stiles with mortise-and-tenons. I cut the mortises with a mortiser and the tenons with a dado set at the tablesaw. Make sure the rails are 1/32 in. wider than their final width so they can be planed flush later. Before you glue up, cut and rout feet into the bottom of the stiles using the template as a guide.

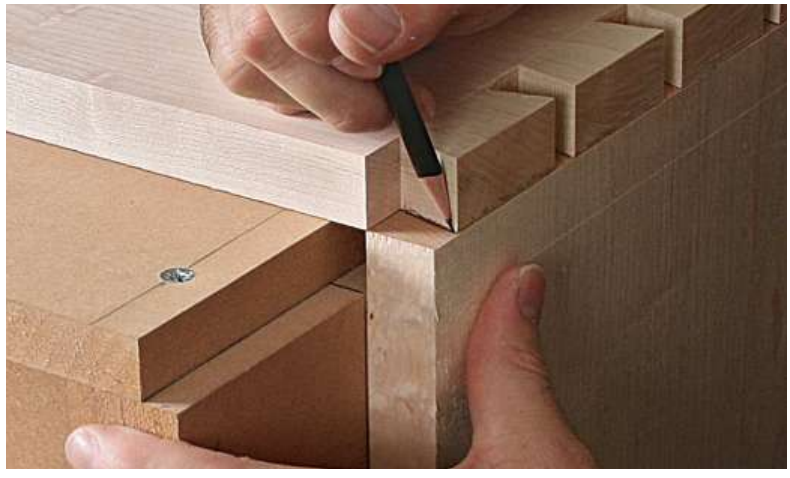
Glue the face frame together, using a spacer to keep the stiles from toeing in at the feet. The spacer's length should equal the shoulder-to-shoulder length of the rail. Once it has dried, glue the frame to the case. The top edge of the rail should be flush with the top of the

JIG HELPS LAY OUT AND CUT PINS



CASE DOVETAILS

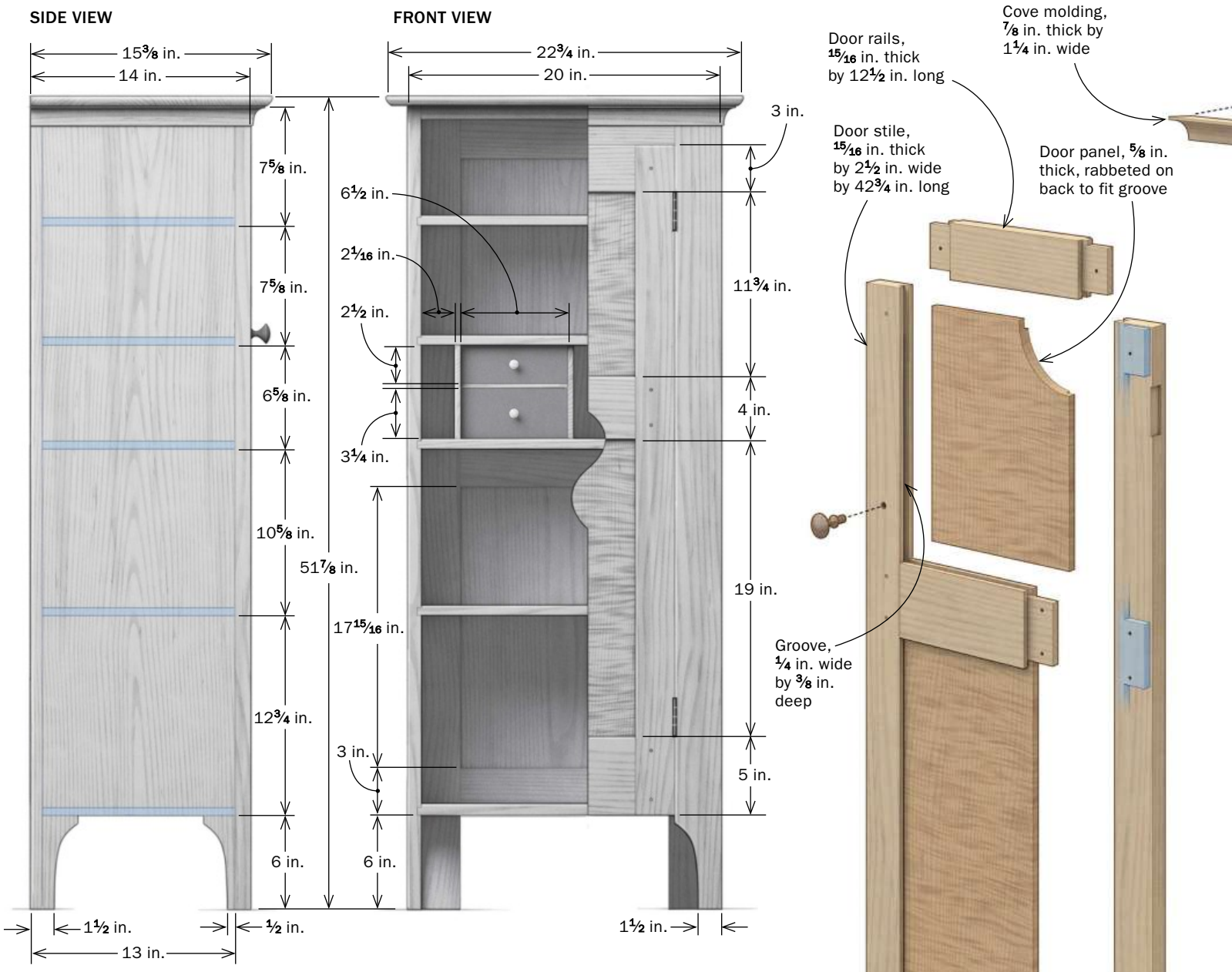
Platform for pins. *An MDF jig clamped to the case side lets Kenney put the tall piece vertical in his bench vise, making it easy to transfer the tails from the subtop to the sides and to rout the pins. The jig must be flush and square with the top of the side.*



Photos, except where noted: Dillon Ryan

Enfield cupboard

This fresh take on a classic Shaker cupboard has a hard maple case with curly maple in the frame-and-panel door. Milk-painted drawers on the interior add a bit of color and improved storage for smaller items.



case and you can reuse the spacer during this step to keep the opening square.

Plane the face frame flush to the cabinet, then install the shelves. The shelves immediately above and below the drawers get stopped dadoes for the vertical dividers. I cut these at the router table with a spiral upcut bit. After fitting the vertical dividers, you need to cut stopped dadoes in them for the drawer divider. Once the dividers are glued in, you can turn to the door construction.

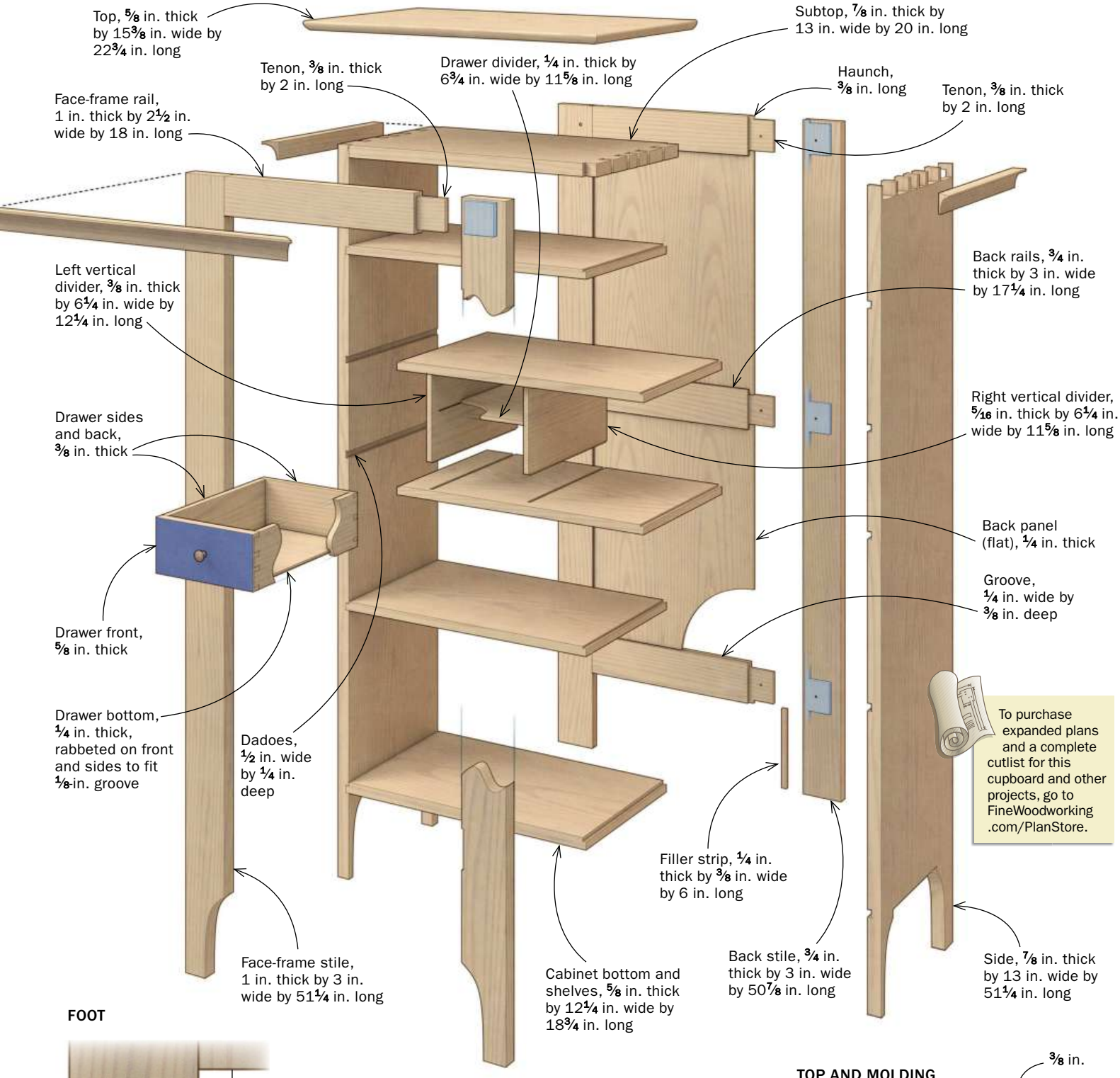
Build and hang the door

The door is frame-and-panel construction. The raised panels are done using a special Shaker panel-raising bit ($37, leevalley.com, 16J66.51), but as the Shakers did, I placed the

Article Extra

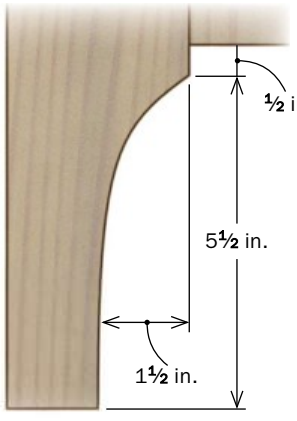
Watch Kenney's step-by-step video tutorial on applying a milk paint finish.

Drawings: John Hartman

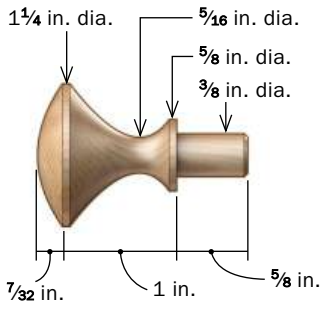


To purchase expanded plans and a complete cutlist for this cupboard and other projects, go to FineWoodworking.com/PlanStore.

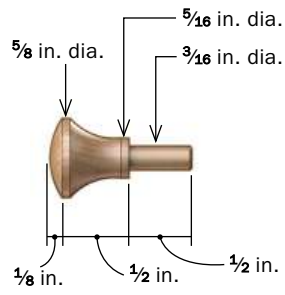
FOOT



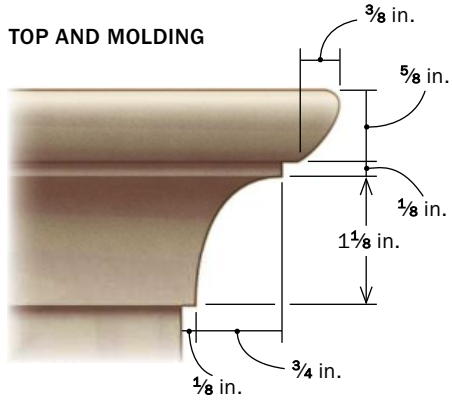
DOOR PULL



DRAWER PULL



TOP AND MOLDING



Dadoes for shelves. *The dadoes for the shelves are cut at the tablesaw with a crosscut sled and dado set. Kenney uses the rip fence as a stop to ensure that the dadoes on both sides are cut perfectly in line.*

Rabbets for the back. *The case sides are rabbeted at the router table with a bearing-guided bit. The bottom of the case sides can be rabbeted straight through, but at the top, the rabbet must be stopped at the pin baseline to avoid a gap in the joint.*

Feet finish the sides. *After tracing the foot pattern on the case sides, cut out the curved portions at the bandsaw and remove the waste. Once that's done, clean up the feet to the line and square the corners with a chisel.*

raised fields on the inside. After gluing the door together, reinforce the joints with shopmade pegs (see drawing, p. 36).

Hanging the door is a bit easier because you only have to fit three sides. Cut the hinge mortises in the door stile first. I use a template and a short flush-trimming bit. Then set the door in the opening with spacers between the door's top edge and the face frame so that the gap there will match the gap on the hinge side. Transfer the mortises to the face frame and rout them. I use the same bit and template. Next, hang the door and try to close it. This should give you an idea of how much material needs to be removed from the lock stile. Remove the door from the hinges and plane the stile with a slight inside bevel on the edge. If you plane it square, by the time the back corner clears the face frame, the visible gap can be too big when the door is closed.

Before moving on to the top, make and fit the drawers. At this point you can also make the pulls for the door and drawers, but don't install them until after you've finished the cupboard.

Add the top and molding

Now turn your attention to the top and the molding. The top has a simple bullnose profile on the front and side edges that I shaped by hand using a block plane. Set the plane for a heavy shaving, working to just outside the layout line. Reset the plane for a light shaving and work right to the layout lines. With a sharp plane and light shavings, the facets left behind will be so small and smooth that there's no need to sand afterward.

Screw the top to the case and start the two-step process to make the cove molding: I remove the waste at the tablesaw and then clean up the rough profile with a hollow plane. Start with a blank milled to the molding's final thickness, ¼ in.

CASE GLUE-UP

Dovetails first. *Using cauls, glue the dovetails at the top of the case first (above). Putting the bottom and a shelf or two into the case will help keep it square during this part of the glue-up. Kenney glues in the bottom separately using cambered cauls (below), making sure the back of the bottom is flush in the rabbet so the back can fit in later.*

FACE FRAME

Simple frame. *With the mortise-and-tenon joints cut and fitted, a single clamp takes care of the top portion of the glue-up.*

Help staying square. *Use a spacer cut to the same shoulder-to-shoulder length as the frame's top rail to ensure a square glue-up.*

Seamless frame. *The face frame simply gets glued to the front of the case and then planed flush with the case sides.*

Dadoes for dividers. *Use a ¼-in. straight bit to cut the stopped dadoes into the case shelves for the vertical dividers that will form the drawer box.*

wider than its final width, and long enough to wrap around the three sides of the cabinet, plus 6 in. to allow for mistakes in the fitting process. Lay out the profile on the end grain. At the tablesaw, set the rip fence and blade height so that you can cut a kerf down the low side of the molding. Move the fence and raise the blade to cut a second kerf next to the first one. Repeat this process until you have reached the top of the molding (see photo, opposite).

There should be a ¼-in.-wide strip of waste that supports the molding as you cut away the waste. Flip the molding, put its back against the rip fence, and cut the waste free.

Head to the bench to turn the stepped, rough molding into a smooth profile. The best tool for this is a hollow plane, but a gooseneck scraper works too. I prefer to hold the plane vertical during use, so I made support blocks that hold the molding with the arc faceup.

As you plane away the remaining waste, don't worry if the profile isn't perfectly identical along the molding's length. What's most important is that it matches where it bends around the cabinet—and it will, as a natural outcome of how you'll cut and hang the molding. Start with one side of the cabinet. Cut a miter in a length of molding a few inches too long for the side. Hold it up to the side so that the miter is aligned with the front face of the cabinet. Mark the back end, and cut it flush. Drill clearance holes in the molding so that it doesn't split, and nail it to the cabinet.

Now fit the front molding. You'll need to recut the mitered end that was left from the first side. This miter cut should mate to the piece that's hung. Hold the molding on the cabinet with the miter joint closed tightly and mark the back for length directly from the cabinet. I cut it a bit long, fit it with a shooting board, and nail the molding in place. To fit the last piece, recut the mitered end so that it mates with the open miter on the cabinet, hold it, mark it, and crosscut it. Nail it in place.

Make the back and add the finishing touches

For the frame-and-panel back, I cut the joinery the same way as for the door. The stiles extend to the floor, but I didn't shape

Ready for drawers. *The left vertical divider slides up to the back of the face frame to close off the space between the divider and the cabinet side. The right divider stops ⅝ in. short of the shelf's front edge, creating space for the pulls. The horizontal divider stops flush with the right divider.*

MODIFIED BULLNOSE

Hand-cut profile. *Trace the bullnose onto the long grain. Cut the end-grain sides of the top first, using a block plane to slowly work down to the line (above).*

Cinch down the top. *After centering the top on the case and clamping it down, pre-drill and screw it on from the inside (right).*

them like the other feet because the cabinet will live against a wall. After the cabinet is finished, attach the back with countersunk screws.

I finished the cabinet with shellac, brushing it on and sanding between coats. After the final coat, I knocked it down with extrafine steel wool and then waxed it. For the drawer fronts, I used three coats of Old Fashioned Milk Paint (Federal Blue). Before you spread any paint, tape off all four edges of the front. I sanded with 320-grit paper after coats one and two, and then used 0000-grit steel wool after the third coat. Then I rubbed on a coat of wax.

Finally, glue the pulls in place and install a catch for the door. For a catch, I glued a magnet into the lock stile and covered it with leather. The magnet sticks to a screw—countersunk and covered with leather—driven into the shelf edge opposite. □

Matt Kenney is a senior editor.

SHOPMADE COVE TRIM

Start at the tablesaw. *Once the profile for the molding is traced on the stock, use consecutive passes, at increasing heights, to nibble away the waste. A featherboard keeps the thin stock against the fence. Then cut off the bridge piece to free the cove.*

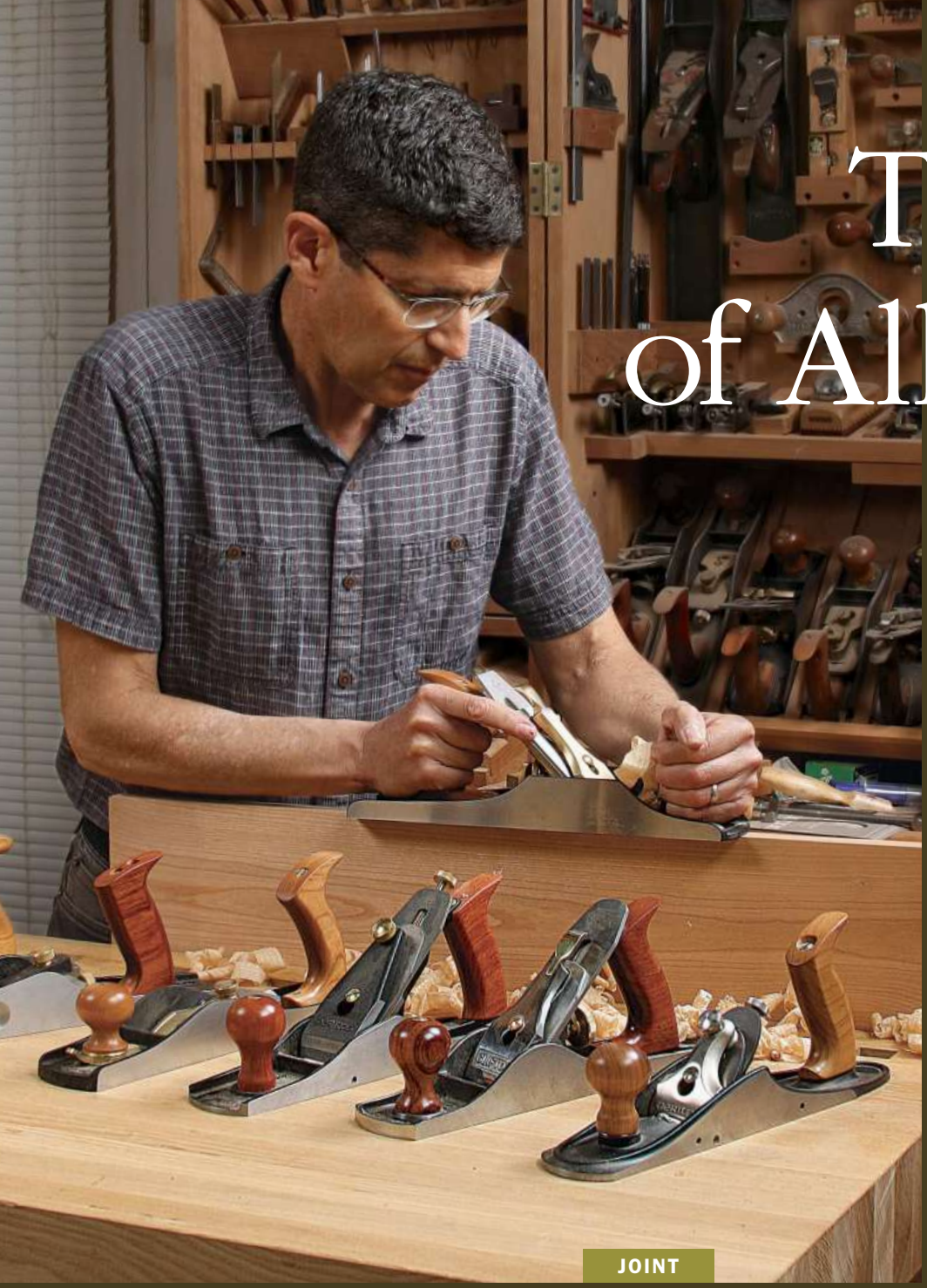
Refine by hand. *A hollow plane makes quick work of smoothing out the ridges left by the tablesaw. After that, any imperfection can be sanded out with a shaped sanding block.*

Fit and finish. *After mitering the trim and cutting it to length, predrill and nail it to the case. Kenney used hand-cut nails.*

The Jack of All Planes

From flattening to smoothing, the No. 5 can do it all

BY JEFF MILLER



Jack planes are the workhorses of the shop and the go-to tool for a variety of woodworking tasks. The jack plane handles smoothing as well as the shorter No. 2, 3, or 4. It also can be used for the flattening and straightening tasks often reserved for the longer planes: the No. 6, 7, or 8. As its name suggests, this plane is a jack of all trades.

Ideally, a jack plane should be capable of taking very fine shavings and leaving a great finish, and yet be able to remove lots of wood in a hurry when set for a deeper cut. It should also be adept at jointing edges prior to gluing up a panel. With all of these important attributes in mind, I put 12 jack planes through their paces to see which ones I'd give a permanent home in my workshop. The list includes planes

ONE PLANE, MANY TALENTS

A jack plane set up for a fine cut is a perfect smoother for most projects. With a few adjustments, the plane can transition to heavy cuts, flattening rough surfaces—even a workbench. Its added length over the No. 4 makes it adept at jointing edges as well.

Photos, except where noted: Asa Christiana

from Clifton, Footprint, Kunz, Lie-Nielsen, Stanley, Veritas, and Wood River.

A close look at the critical parts

After unpacking and degreasing the planes, I checked the soles for flatness, and looked to see if the sides were ground square to the sole, critical if you're going to use the jack for shooting (a task it is well sized for). All but a few planes needed some work to flatten the soles, and some needed work on the frogs. The least expensive planes in the test needed a lot of work.

Blade and chipbreaker—All planes need sharpening out of the box, a straightforward job. But if the back of the blade isn't ground flat at the factory, you have some labor to do. I flattened and polished the blade backs and sharpened all the blades. The amount of work required varied among the different models.

I also looked at the chipbreakers to see if they made solid contact with the plane iron, and if they were stamped or machined. Without perfect contact, the blade will vibrate and chatter, and any gap can cause chips to clog the plane. The stamped type are thinner and generally need more attention to ensure they contact the back of the blade properly. Because they're thin, they don't dampen vibration at the tip of the blade as well as the thicker, machined chipbreakers. But even the machined chipbreakers will occasionally need fine-tuning to be sure that they seat well and that the machined contact face is smooth and flat.

Blade adjustments—An easy-to-use blade-adjustment mechanism—one that holds its settings—is incredibly important. Jack planes come with one of two types, the Bailey-style mechanism (Stanley, Footprint, Wood River, Clifton, and Lie-Nielsen) or the Norris-style adjuster (Kunz and both Veritas planes). The choice is really one of personal preference. Do you want all the adjustment on one lever, or the depth and the angle adjustments separate? More importantly, can you reach the knob with

Features to consider

FAST AND PRECISE BLADE ADJUSTMENTS

Split adjustments. *Planes with Bailey-type adjusters use a wheel to set the blade depth (top) and a lever for lateral changes (bottom).*

Two in one. *Planes with Norris-type adjusters, like the Veritas 5¼ W, combine depth and lateral adjustment into one mechanism. Turning the knob changes the depth and swinging the lever makes lateral adjustments.*

CONVENIENT MOUTH ADJUSTMENTS

You shouldn't have to remove the blade. *Mouth adjustments are made by moving the frog or by sliding a toe, or shoe, at the front of the plane. Planes with a Bedrock-style frog (or similar) let you move the frog with the blade in place by turning screws at the back of the frog. With planes that use a sliding toe to adjust the mouth opening, like the Veritas Custom No. 5, you never have to remove the blade for mouth adjustments.*

Bevel-up jack planes: In a category of their own

The bevel-down jack planes are truly the grab-and-go tool for a multitude of shop tasks. But the bevel-up (low-angle) jack planes—originally designed to surface end grain—are versatile tools as well, especially considering that simply regrinding the bevel gives you the ability to have a low cutting angle for end grain or a high cutting angle for difficult grain. So I tested each type separately, awarding a winner for each. The bevel-up models are featured on pp. 46-47.

your hands in place on the plane? You can probably get used to either type, but I prefer the Bailey-style controls.

There was great variation in how well the plane's mechanisms were designed and machined. Most worked well, but a few had more slop and backlash.

Mouth adjustments—You typically set the mouth opening tight to the blade for fine work and more open to keep the mouth from clogging when removing heavier shavings. The jack plane is one of the few planes where you'll regularly use this adjustment, since it tends to be used for a wide range of tasks. On the planes I tested, you can adjust the mouth either by moving the frog (with the blade in place or out), or by sliding a toe, or shoe, at the front of the plane. Planes with a sliding toe let you keep the blade in place for mouth adjustments.

The Veritas planes have additional convenient features. They employ set screws in the plane body to restrict any side-to-side movement of the blade. And the Veritas Custom No. 5 has a stop to prevent the toe from smacking into the blade when you close up the mouth.

Put to the test

For the real-world tests, I set up two jobs at opposite ends of the spectrum. First, I did some finish smoothing on straight-grained walnut, curly maple, and finally teak. Once the smoothing tests were done, I reflattened a couple of heavily used workbenches (a brutal task for a plane, with all of the embedded dirt and grit in the top). I cycled through the planes on both tasks, evaluating how they held up under fine work and then under hard work, resharpening as needed. I noted how the planes felt in use—which seemed to make the task easier or harder, and which seemed the most responsive.

Conclusions

I was able to tune up each plane, but the Lie-Nielsen No. 5 stood out for overall quality, ease in getting it to work perfectly, and good, solid adjustments. It had tight machining, the most positive feedback, and could do any job from finish smoothing to rough flattening, or shooting end grain. The Veritas No. 5¼ W was close behind the leader and priced well below it, making it the Best Value.

Jeff Miller makes custom furniture and teaches woodworking in Chicago (furnituremaking.com).

LIE-NIELSEN NO. 5

Price: $325
Blade material: A-2
Chipbreaker: Machined

AUTHOR'S BEST OVERALL CHOICE

The Lie-Nielsen No. 5 was very well-machined overall, with lateral and depth adjustments that had the least backlash of any of the Bailey-style planes. The back of the blade was perfectly flat, and the chipbreaker seated fully against the blade. The sole was flat and the sides were square. The Bedrock-style frog made adjustments to the mouth quick and easy without the need to remove the blade. With a quick honing of the blade, this plane cut very well and adjusted easily between fine smoothing and heavier flattening. This is a quality plane that feels reliable and precise in your hands.

VERITAS 5¼ W

Price: $258
Blade material: PM-V11
Chipbreaker: Stamped

AUTHOR'S BEST VALUE CHOICE

The Veritas 5¼ W had a great overall fit and finish. The Norris-style adjuster was tight and precise. The blade was flat, easy to sharpen, and withstood the bench-flattening test with barely any dulling, unlike some of the other blades. The stamped chipbreaker set up well and mated tightly to the blade. The 5¼ W has a handful of useful features at an affordable price, such as toolless mouth adjustment via a sliding toe and screws in the plane body that prevent lateral movement of the blade during adjustment. Combine this with solid machining and quality throughout, and choosing this as Best Value was an easy call.

Photos, these two pages and p. 43 (bottom): Michael Pekovich

CLIFTON NO. 5

Price: $320

Blade material: Cryogenically treated high-carbon steel

Chipbreaker: Machined, two-piece

This is a well-machined plane with only a small amount of backlash in the Bailey-style adjustment mechanisms. The blade was ground slightly unevenly and had to be flattened, but the unique, two-piece chipbreaker worked well and contacted the blade solidly. The sole was flat, but the sides were slightly out of square, which limits the plane's use with a shooting board. A Bedrock-style frog allows the mouth to be adjusted without removing the blade, a great time-saver.

FOOTPRINT NO. 5

Price: $60

Blade material: Carbon steel

Chipbreaker: Stamped

This plane required a lot of work. The stamped chipbreaker initially had very little contact and the back of the blade was convex, with a high spot in the middle. The frog was poorly machined and neither flat nor smooth. The sole needed the most work—I spent at least 30 minutes flattening it. After all of this work and a careful sharpening, the plane cut fairly well but excessive slop in the Bailey-style blade adjustments and overall poor machining hindered its performance. The frog was a rudimentary Bailey type that required blade removal for mouth adjustments.

KUNZ 5PLUS

Price: $240

Blade material: High-carbon steel

Chipbreaker: Machined

The cap-iron screw on the Kunz 5Plus was very fussy in use and while the back of the blade was very close to flat, it was ground coarsely, and it took a while to remove the scratches from it. The plane needed a lot of work to get the sole flat as well, although the sides were square to the sole. The Norris-style adjuster had a lot of slop, which translated to unpredictable cuts and settings that didn't quite keep. The mouth adjustment requires blade removal, which slows down setup.

STANLEY NO. 5

Price: $75

Blade material: Carbon steel

Chipbreaker: Stamped

Out of the box, the Stanley's stamped chipbreaker was easy to tune up, but the blade suffered from a high spot in the center that was hard to remove. The plane iron did not sit flat on the frog and I discovered a significant hollow area (almost 1/32 in.) on the frog. The sole of the plane was seriously out of flat and took 45 minutes to flatten. Despite all of my efforts, the plane still cut poorly, mostly due to poor machining. The Bailey-style frog worked decently but required removing the blade for mouth adjustments.

VERITAS CUSTOM NO. 5

Price: $330

Blade material: PM-V11

Chipbreaker: Machined

The Veritas Custom No. 5 was well-machined and its Norris-style adjuster was tight and precise. It has a unique system for setting the chipbreaker with two small Allen-head bolts: one sets the location of the chipbreaker and one attaches the blade to the chipbreaker. This system is cool in that it retains your chipbreaker location setting perfectly, but the button-head bolt is very small and not easy to get a hand on. The back of the blade required only minimal work to flatten. The sole was flat and the sides were square to the sole. Adjusting the mouth was easy and quick via an adjustable toe.

WOOD RIVER NO. 5

Price: $170

Blade material: High-carbon steel

Chipbreaker: Machined

The thick blade on this plane is a nice feature but its back was high in the center, making it difficult to flatten. The chipbreaker fit well and was also thick, but its machined edge needed a little refining for optimal contact. The sole needed flattening, but the sides were square to the sole. The Bedrock-style frog worked well and made mouth adjustments easy. After a small amount of work the Wood River planed fairly well but the Bailey-style depth and lateral adjusters both had a significant amount of backlash.

The best of the bevel-ups

As I mentioned, when compared with bevel-up models, I find that standard jack planes are a better choice for first-time buyers because they leave a slightly better surface when doing fine work and they adjust more easily, characteristics that are beneficial, especially for someone relatively new to planing. That doesn't mean bevel-up planes don't have a place in the shop. Four planes in the test are bevel-up models. With the blade bedded at a low angle, these planes were originally designed for surfacing end-grain butcher-block tops, but they have gained popularity as a general jack plane alternative. The likely reason is their versatility.

Out of the box, a bevel-up plane is typically sharpened for a 37° cutting angle, which is the bed angle plus a 25° bevel on the blade. That's great for end grain and wood with highly cooperative grain, but they tend to tear out with more challenging grain. In these situations, you need to increase the effective cutting angle by sharpening the blade's bevel at a steeper angle. For instance, to match the 45° cutting angle of a standard jack plane, the blade needs a 33° microbevel (or a completely reground bevel, if you want to go through all that work). And you can go steeper. I keep two extra blades on hand: one for a 45° cutting angle and another for a 75° cutting angle. My steepest blade basically turns the plane into a very effective scraper plane. Keep in mind that these steeper angles aren't as durable and will dull more quickly than a blade sharpened at 25° to 30°; that's an optimal angle taking into account smoothness of cut and durability of the edge.

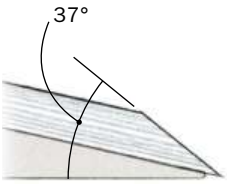
Two of the models feature a Norris-style blade adjuster, which handles both lateral and depth adjustments. A couple of planes come without a lateral adjusting mechanism. To square up the blade, I use a light hammer. This can be something with a brass head, but I've also used a rawhide hammer, or even one with a wooden or a steel head. Once you get a feel for how much your hammer moves the blade when you tap it on the side, adjustments can be at least as precise as those made with a lever.

These can be a good replacement for the bevel-down jack planes, as long as you're willing to spend the time resharpening the blade for different tasks or have the budget to invest in extra blades to have at the ready. But that's not for everyone.

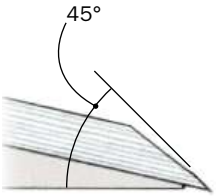
Of the bevel-up planes, the Lie-Nielsen and Veritas models stand out due to the quality of their machining and precise adjustments.

CHANGE THE ANGLE TO SUIT THE TASK

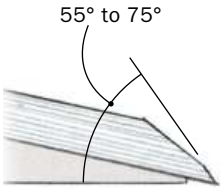
The bevel-up jack plane's effective cutting angle can be changed with ease just by regrinding the bevel or adding a microbevel. Switching the angles gives a single plane the ability to tackle many tasks other planes cannot.



Low angle for end grain. *A blade ground at 25° results in a cutting angle of 37°, which is perfect for cleanly slicing end grain. That's why a low-angle plane is ideal for use with a shooting board.*



Most useful angle. *A 33° grind will turn your bevel-up plane into a standard jack plane, making easy work of smoothing and flattening tasks.*



High angle for difficult woods. *With the blade ground to an even steeper angle, bevel-up jacks can tackle heavily figured or wild wood with ease.*

LIE-NIELSEN NO. 62

Price: $245

Blade material: A-2

This plane was very well machined, with a flat blade back, a flat sole, and square sides, and it cut very well. Mouth adjustments were precise. Blade-depth adjustments were precise and easy, but using a hammer for lateral adjustments takes getting used to. Once made, the adjustments held. An accessory handle ($60) is also available for use with a shooting board.

Tap to square it up. *The Lie-Nielsen and Wood River No. 62 (below) have no mechanism for lateral blade adjustment, so it is done with a small hammer after the blade depth has been set.*

VERITAS NO. 62½

Price: $257

Blade material: PM-V11

This plane was machined well, and the Norris-style adjuster was spot-on. It's wider and heavier than the rest of the bevel-up jacks, which means it takes a wider cut and has the momentum to power through some heavy flattening. On the other hand, the added width also meant the plane was a bit hard on the user and could be a bear to push through heavy cuts. The sole was flat, the sides were square, and the PM-V11 blade sharpened easily and took a beating without flinching.

STANLEY SWEETHEART NO. 62

Price: $140

Blade material: A-2

The back of the blade was mounded in the middle, but I was able to flatten it. The adjustment mechanism had a lot of slop and backlash, and allowed very limited movement. I had to file the bed of the plane a little to allow the blade to sit square. The sole of the plane needed a fair amount of work to get flat and the sides were not square with the sole. Once tuned up the plane cut well, but it suffered because of the poor machining and a cast aluminum cap-iron screw that was not easy to grip.

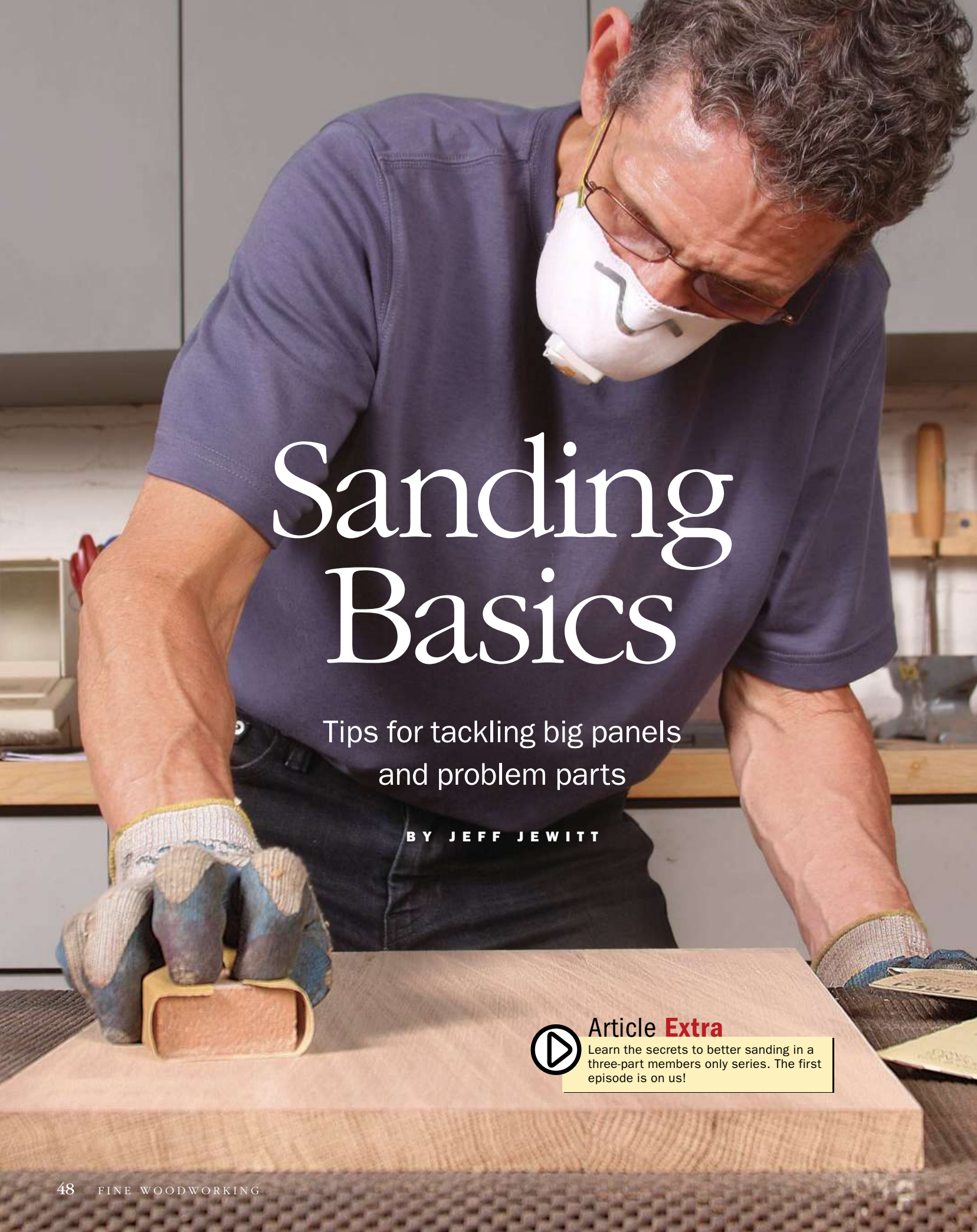
WOOD RIVER NO. 62

Price: $200

Blade material: High-carbon steel

One corner of the blade did not clean up even after 10 minutes of flattening. The small front knob was noticeably less comfortable than those found on the other planes. The sole needed a fair amount of flattening, but the sides came square and the unit planed well after this work. The depth adjuster had a small amount of backlash. The relieved area at the back of the blade made lateral adjustments via hammer difficult.

Plane photos, this page: Michael Pekovich



Sanding Basics

Tips for tackling big panels and problem parts

BY JEFF JEWITT

Article Extra

Learn the secrets to better sanding in a three-part members only series. The first episode is on us!

Smoothing a flat surface

To smooth a panel efficiently, combine machine and hand techniques, working from coarser to finer-grit abrasives.

Even if the wood's surface appears perfect after you've run it through the tablesaw, jointer, or planer, it's not. All of these machines leave their marks, and the tricky part is that those marks often aren't visible on bare wood. Unfortunately, they'll jump out once a stain or clear finish is applied. That's why all boards coming off a machine need further leveling and smoothing.

The type of preparation you use—hand, machine, or a mix of the two—will be dictated partly by the piece you're working on. If you're making a period reproduction where nuanced tool marks are a sign of handcraftsmanship, all you may need is a final quick sanding with very fine sandpaper after using scrapers and planes. However, most woodworkers want a dead-flat and smooth surface, and the way to achieve this is with modern abrasives and sanding machines. Here I'll give you my time-tested methods for getting the best results with these tools.

START WITH POWER

Erase machine marks. *Use a 5- or 6-in. random-orbit sander, starting with 150-grit paper and finishing with 180-grit. Jewitt uses cushioned work gloves to dampen the sander's vibration.*

FINISH BY HAND

The right angle. *After power-sanding to 180 grit, Jewitt starts hand-sanding with 220-grit paper wrapped around a cork sanding block. Your shop teacher may have yelled at you if you didn't sand with the grain, but sanding at a slight bias of 7° to 10° shears off the wood fibers better without leaving visible cross-grain scratches.*

Hand-sanding disks. *If you find it tiring to grip a sanding block for long periods, use a strap-on hand pad designed for hook-and-loop disks.*

End with the end grain. *You can usually stop sanding face grain at 220 grit, but go to 400 grit on end grain for a glass-smooth finish.*

Flatten a large panel

Panels that are too wide for a jointer and planer, like a glued-up tabletop, must be flattened before smoothing. A belt sander is the best power tool for the job.

A FLAT GLUE-UP SPEEDS SANDING

Clamp down, then across. *First clamp the boards between battens to bring them flush. Then apply pressure across the panel to make the joints tight (above). To prevent gumming up the sandpaper, scrape off dried glue (right) before you start sanding.*

The big challenge: Flattening wide panels

I've been answering woodworking and finishing questions for more than 20 years and one thing that causes a lot of head-scratching is how to flatten a multi-board panel. It is too wide to go through your planer, your handplane skills may not be up to the challenge, and your 5-in. random-orbit sander is inadequate. To cap it all off, this panel often becomes the most visible part of a project, whether it is a tabletop, a desktop, or the sides or top of a chest of drawers. It needs to be perfect.

My answer is to use a belt sander. But the first step in my flattening process occurs during glue-up, when I align the boards as carefully as possible. I clamp 1½-in.-square battens across the glue-up near the ends and in the middle to sandwich the boards into alignment. I use laminate-faced battens to repel glue, but packing tape will work, too. I then partially tighten the bar clamps underneath the board and try to bring the joints flush where there's any misalignment, using a non-marking mallet for extra persuasion. When the panel is as flush as possible, I apply the rest of the bar clamps and snug them all down.

Despite these precautions, unless you're very lucky, there will still be some bumps at the joints. This is where you bring in the heavy equipment. The best tool for the job is a large 4-in. by 24-in. belt sander. A second choice, though slower, is a good-quality 6-in. random-orbit sander with either a barrel grip or a pistol grip.

When sanding panels, you level the surface by bringing the high spots down to the low ones, removing the milling marks at the same time. To do this logically and efficiently, I use a crosshatch technique just the way you would when using a scrub plane to level large panels. While it's counter-intuitive because most have been taught to sand "with the grain," this technique levels better. Start by drawing some pencil or chalk lines across the width of the panel. Load the sander with 100- or 120-grit paper and move it

Photos: Mark Schofield

ATTACK FROM DIFFERENT DIRECTIONS FOR EVEN STOCK REMOVAL

Crosshatch pattern. *The best way to level joints between boards is to run the sander at 45° to the grain, first to the left (left) and then to the right (right).*

Now go with the grain. *Once the joints are level, sand with the grain to flatten the whole board.*

Check your progress. *Use a straightedge that exceeds the width of the panel so that you can check for high spots. Once the panel is flat, you can start the smoothing process (see p. 49).*

across the panel at a 45° angle. Make three to five passes down the whole panel, overlapping strokes by an inch or two, then switch to the opposing 45° angle and do the same. Keep switching until the lines are gone. Then sand the whole panel with strokes along the grain. As you work, check your progress with a straightedge. Once the surface is flat, you can start the smoothing process.

Smoothing flat surfaces by machine and by hand

Now switch to a 5-in. or 6-in. random-orbit sander and continue smoothing the surface with 150-grit disks, then 180-grit disks. This time, move the sander with the grain or at a slight angle. With random-orbit sanding you should not skip grits. One reason these machines sand more efficiently is because they put cross-grain scratches in the wood. If you skip grits, more than likely you'll see coarse scratch marks later.

One of the hardest things is to know when you've sanded enough with a particular grit. Trust your eyes and your hands. Work at a comfortable height and with a strong light source on the far side of the workpiece. If you don't have a source of good natural back-lighting, use a spotlight that you can position to rake

Sanding challenges

Narrow sections, tight corners, and curved surfaces all require special sanding techniques.

NARROW PARTS

Tipping the balance. *On a narrow surface it is easy to tip the sander to one side, rounding over the crisp edge (above). Sanding multiple narrow sections at once not only creates a stable surface to sand on but speeds up the process (right).*

TIGHT CORNERS

Custom sanding block. *To reach right into a corner without sanding across the grain, attach pressure sensitive adhesive (PSA) sandpaper to a small block, or mount regular paper to the block using spray adhesive.*

the workpiece. As you sand, inspect the sandpaper periodically to make sure it's not clogging up or wearing out. Power sanders that have dust extraction are a must in today's shop, but the disks will eventually wear out, so examine the edges for worn grit, tears, or creases. Don't be frugal—worn-out sandpaper can do more harm than good.

Once you have power-sanded to at least 180 grit, you are ready to sand by hand. Tear a sheet of sandpaper into the size you want, typically quarters. I have an old hacksaw blade mounted on the edge of my workbench to do this. Back up the sandpaper with a sanding block. You can also use hook-and-loop disk sandpaper with a grip-faced hand pad. Hand-sanding is rough on the hands, so wear garden gloves or work gloves. I buy the ones with rubberized palms so I can get a better grip on the sandpaper and the part I'm working on.

Every woodworker is taught to hand-sand by pushing the paper with the grain. However, I prefer to hand-sand at a slight bias of 7° to 10° because it slices off wood fibers better. If you've done a good job sanding on the machine, you can probably begin and end the hand-sanding using 220-grit paper.

Because hand-sanding always leaves a scratch pattern that follows the grain or blends in with it, you can get away with skipping grits. For example, you can start hand-sanding at 100 grit, go to 150, and then skip to 220. If you're just starting out as a

TIP KEEP YOUR SANDPAPER CLEAN

When hand or machine sanding, the sandpaper can get clogged with dust (1). To clean it, swipe the sandpaper across a piece of synthetic abrasive pad (2). The result is clean sandpaper that keeps cutting longer (3).

woodworker and are not yet sure of your technique, play it safe and don't skip grits.

How to handle curved surfaces—On complicated areas such as moldings, carvings, routed profiles, and rounded or curved areas, a power sander can ruin the shape, so you must sand by hand. When you hand-sand curved surfaces, always try to back up the sandpaper with a rigid or semi-rigid block that matches the wood's profile. The woodworking and automotive industries both offer flexible sanding blocks designed for contour sanding. You also could use dowels or custom blocks made from rigid foam insulation. On more intricate profiles, just use your fingers or hand.

When to stop sanding

How far you sand is a question that's been argued and debated by woodworkers for decades. In most cases, you shouldn't have to sand past 220 grit; however, some woods reveal greater luster and figure if you sand with finer grits. In these cases, you be the judge: Look at finished samples side by side that have been sanded to different grits to see if the extra work pays off.

TWO WAYS TO SEE IF YOU'RE DONE

Raking light reveals hills and hollows. *Shine a low light along the panel to make sure it is dead flat.*

Wet the wood. *Use denatured alcohol, mineral spirits, or water to wet the wood and reveal any remaining sanding scratches or machine marks from the jointer or planer.*

CURVES AND MOLDINGS

Stick it and sand it. *For shallow curves, make a flexible sanding block out of a ⅛-in.-thick strip of wood. Attach the sandpaper to it using spray-mount adhesive (above), or use PSA paper.*

There are times when sanding to a higher grit definitely makes a discernible and practical difference. The first is when using water-based finish, where you get a lot of grain-raising when you apply the first coat or two. Sanding to 320 or 400 grit will leave smaller "shards" of torn cellular material, which translates into less raised grain. Another example is sanding end grain: Going up to 320 or 400 grit leaves a more uniform finished appearance.

Always check your sanding before you apply a stain or finish. Examine the surface in raking light and then wipe down the wood with mineral spirits, denatured alcohol, or water. Use one of the latter two if you're using a water-based finish, but if you use water you will have to smooth away the raised grain with the last grit you used. As well as wiping away sanding "swarf" (the mix of sawdust and worn-off sandpaper grit), the liquid will highlight any low spots, milling marks, and sanding scratches.

Once the wood feels dry to the touch, you can correct any problems by sanding again with 150-grit or 180-grit paper, then progress to 220 (or the highest grit you used in that area). Try not to work a small area too much or you'll risk creating a depression that will show when finish is applied. Rather, sand away the blemish and then gradually feather outward to blend in the repair.

Sanding is a lot of work, but remember, the foundation of any fine finish is a well-sanded surface. □

Jeff Jewitt has written several finishing books published by The Taunton Press and is the owner of Homestead Finishing Products.

Your flexible friend. *This thin rubber sanding block can be flexed to match a variety of contours.*

Match the profile. *You can buy rubber shapes like this teardrop sander that match common convex and concave profiles, or look around your shop for suitable alternatives such as dowels.*

Half-Blind Dovetails Cut by Hand

The craftsman's calling card

BY CHRISTIAN BECKSVOORT

Craftsmanship doesn't have to be conspicuous. We've all seen through-dovetails on a drawer front—they scream, "Look at this!" Half-blind dovetails, seen only when the drawer is pulled open, are subtler; yet when revealed they tell in an instant the story of the maker's skill, tools, and aesthetic judgment. A joint that does its job superbly, delivering beauty and strength without straining for attention—that's the essence of the half-blind dovetail on a well-made drawer. The joint brings these same attributes to casework, where it is often used to join the sides of a cabinet to the top.

Once you're comfortable making through-dovetails (for a full discussion of my technique, see *FWW* #238 and #239), cutting the half-blind is well within reach. The tails are cut in the same way as they are for the through-dovetail. It's just the pins that differ, requiring some careful sawing and extra chisel work. Let's start from the beginning of a typical drawer, and concentrate on the major differences.

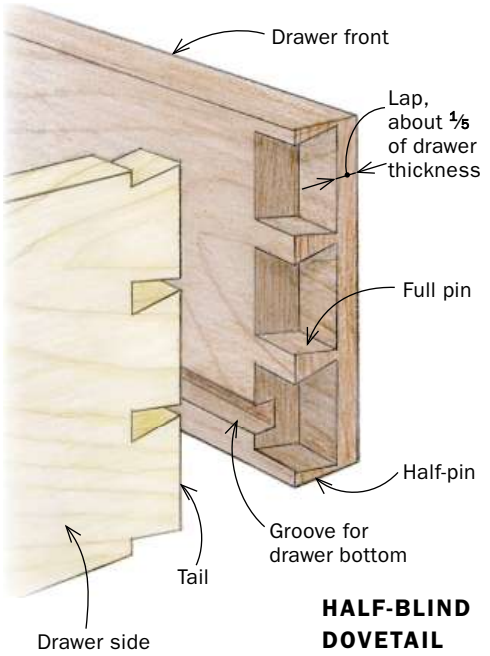
First steps in layout

Before you begin laying out the dovetails, cut the groove for the drawer bottom in the drawer front and sides. Because the ends of the tails will not be visible once the joint is assembled, the grooves in the drawer sides, like the one in the drawer front, can be cut all the way through.

The next decision is how long to make the tails—how close they will come to the outside face of the drawer front. For drawers with a ¾-in.-thick front, a rough rule of thumb is to make tails about

Photo, this page: Michael Pekovich

Start with the tails



HALF-BLIND DOVETAIL

Mark the tail length. *Set the marking gauge by eye so it cuts a line about 1/8 in. from the outside face of the 3/4-in.-thick drawer front (left). This marks the lap and determines the length of the tails. Use the same setting (right) to mark the front end of the drawer sides inside and out.*

Reset the marking gauge. *To establish the baseline for the pins, set the marking gauge so the cutter just overhangs the drawer side (above). Then scribe a line at that setting on the inside face of the drawer front (right).*

5/8 in. long, leaving a 1/8-in. lap. If the lap is much thicker than that, the joint begins to look clunky. Any thinner and there is a danger of chiseling through when you chop the sockets for the tails. If the drawer front is thicker or thinner than 3/4 in., you can apply this same 5-to-1 ratio as a guide.

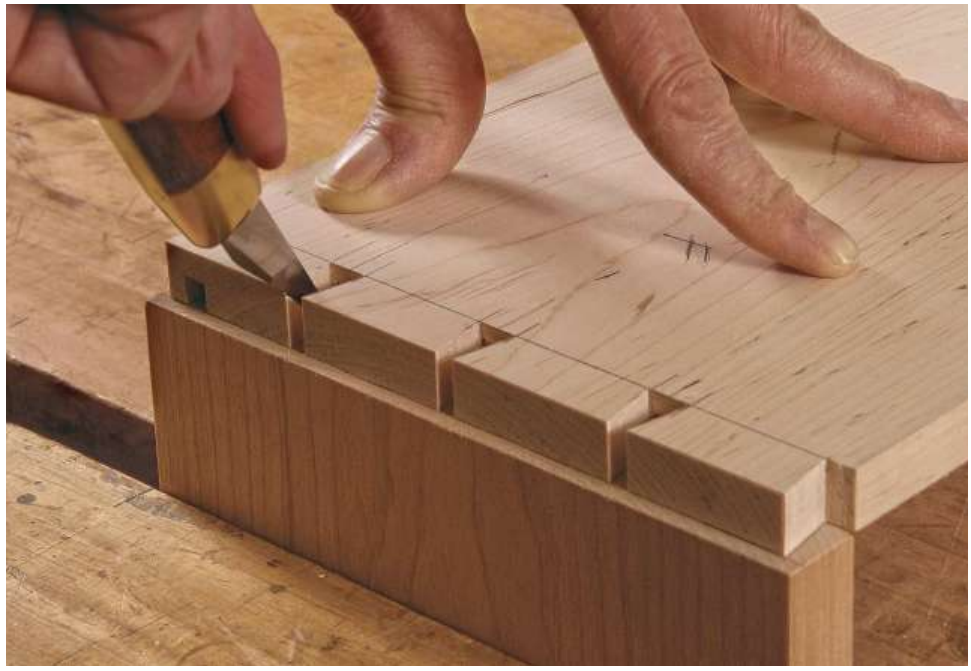
Place the marking gauge fence against the inside face of the drawer front and set the cutter by eye to leave a 1/8-in. lap. Mark both ends of the drawer front. Leave the gauge at that same setting to mark the drawer sides. Run the gauge's fence along

Lay out the tails. *Use your normal process to lay out and cut the tails in the drawer sides—they're no different than in a through-dovetail joint.*

Drawings: Kelly J. Dunton

Scribe the pins

Set up for transfer. *Place the drawer front in the bench vise, level with a scrap block. Then use the scrap block on the bench to support the far end of the drawer side. A spacer sized to the bottom groove aligns the side and front.*



Align the lap line and scribe. *Position the ends of the tails flush to the scribed lap line (above). Use a sharp knife to trace the tails onto the end of the drawer front (right).*

the front edge of each drawer side, marking both the inside and outside faces.

Now reset the gauge to the thickness of the sides and scribe a line on each end of the drawer front on the inside face. When I set the gauge for this line I let the cutter just overhang the side; that way, the pins will be slightly longer than the side is thick and they'll be easy to plane or sand flush after assembly.

With the marking gauge work finished, lay out the tails on the drawer sides and cut them just as you would for through-dovetail joints.

Transfer the tails to lay out the pins

To complete the layout, clamp the drawer front into a vise, end up and front face toward you. Set its top edge flush with a piece of scrapwood on the bench. Then place the drawer side so that its back end rests on the scrap and its front end rests on the drawer front. An effective way to keep the workpieces in register from side to side during layout is to make a small spacer and fit it to the grooves for the drawer bottom. With the spacer in place, shift the drawer side until the ends of the tails are precisely on the scribed lap line in the end of the drawer front. Place one hand on the drawer side to keep it from shifting, and use a knife to transfer the tails to the drawer front, stopping at the lap line. Then, with a square and a sharp pencil, draw lines from the knifed scribe lines down to the marking gauge baseline.

Saw and chisel to define the pins

With half-blind dovetails, you can only saw about halfway down the pins. I begin by clamping the drawer front at about a 45° angle in my vise, which makes the cut more comfortable and the end lines more

Photos, except where noted: Jonathan Binzen

Saw and chop the pins

Careful kerfing. *With the drawer front at 45° in the vise, saw along the cheeks of the pins until you reach the two scribed lines.*

It's familiar at first. *Start chiseling half-blind pins as you would through-pins. Place the chisel right in the scribe line (above) and begin with light mallet blows. Then pare out a shallow chip (below). The next mallet blows will be harder and the chips thicker.*

visible. Then I saw on the waste side of the lines. If you don't mind "running sawlines"—kerfs that extend past the baseline and are visible inside the drawer—you can define 75% to 80% of the socket with sawkerfs, making the chiseling decidedly easier. Many period cabinetmakers used this approach, including quite a few Shakers; I usually don't. Instead, I accept the more difficult chiseling in exchange for a clean look inside the drawer.

Let's get to the chisel work. It's different than with through-dovetail pins, since you have to stop partway down and can't chop through from both faces, but the main techniques are largely the same. Start with a series of light chisel chops directly in the scribe line. Then remove a thin chip of waste by paring from the front. Once that shallow shoulder is established, the next chops along the baseline can be much harder and deeper. Follow those by removing thicker chips. The waste pieces are now wider than the top and must be split before removing. If you've stopped the sawcuts at the marking-gauge lines, then you'll have to pare in along the cheek of the pin. Continue chopping and paring all the way to the lap line. Last, place the chisel directly into the scribed lap line on the end of the drawer front, and pare all the way to the back of the socket. The

TIP SPECIAL ACCESS

A fishtail chisel, with its flared tip, helps sever the fibers in the acute corners where neither the sawkerf nor the bench chisel could reach.

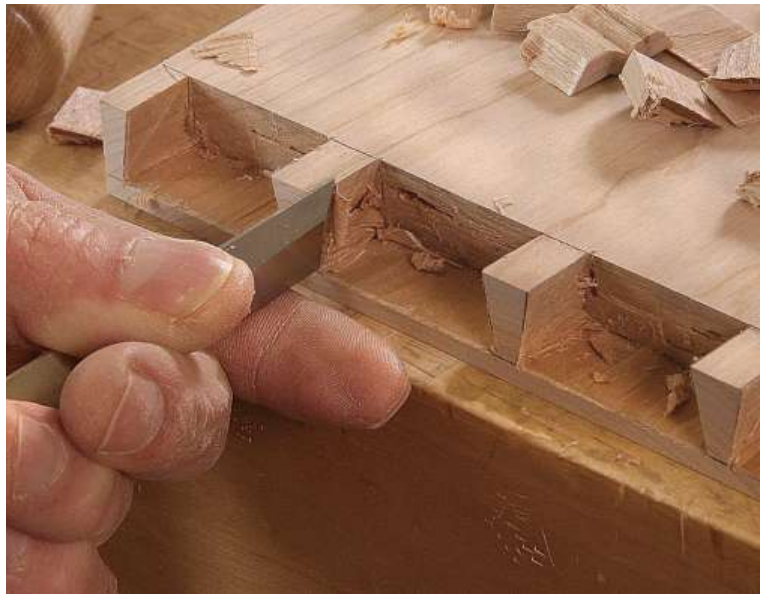
bottom of the socket is not a glue surface, and it can slope gently downward if you like. This creates a space at the inside corner for glue and wood crumbs to collect and ensures a tight fit at the outside.

The inner corners need special attention, and a fishtail or skew chisel is helpful there (see photo, above). If the grain runs severely downhill, extra care must be taken so the waste doesn't break through all the way to the front face. Here a skew chisel or knife can be used to pare from side to side, instead of front to back.

Assembly

After both sides are chopped and cleaned (and the through-dovetails to connect the drawer back are cut), dry-fit the four pieces. Rub graphite on the leading edges of the tails to check for tight spots, then pare the pins to fit. Glue, clamp, and check the diagonal dimensions. Once the glue is dry, sand or plane the slightly protruding pins flush with the drawer sides. When you've installed the bottom and fit the drawer, you can push it into the drawer pocket where it belongs—until something's needed and your craftsmanship is brought to light. □

Contributing editor Christian Becksvoort cuts his dovetails in New Gloucester, Maine.



Work to the lines. *When chopping to the lap line, take the last chips with the chisel right in the scribe line (above). A slight downward angle is acceptable, as this is not a glue surface and the incline will ensure a tight joint at the outside. Then clean the cheeks (left). Use the plane of the sawkerf to guide the chisel in paring the rest of the pin's cheek.*

Knock it home. *When the joint is fitted, the pins should be slightly proud of the drawer side. After assembly, plane them flush.*

Beautiful Bandsawn Boxes

Seamless boxes from a single block of wood

BY MICHAEL CULLEN

I build a lot of furniture—often complex, exacting pieces carefully mapped out in scale drawings. Some years ago I began making bandsawn boxes as a way to relieve the tension of working on such long, demanding projects. The boxes are quick, requiring no measuring, no joinery, and almost no planning. They welcome creativity, opening a door to limitless variations of form and embellishment. And most of all, they are fun. I can grab a piece of scrap, make a fast pencil sketch right on the wood, and work freehand at the bandsaw to create a box in no time.

I've always admired Shaker boxes, with their combination of good form and minimal material making a container that is lightweight, strong, and elegant. My goal with bandsawn boxes is similar: to push the limits of the material without compromising strength or function—and wind up with something beautiful.

I cut the boxes from a single chunk of wood, sawing it apart and then gluing it right back together with some parts removed. This makes for perfect grain matches and no issues of wood movement. I cut a tapered plug from the center of the blank, which I use to make a perfectly fitting bottom to the box as well as a keeper that holds the lid in place.

I make two types of bandsawn boxes. One has two curved walls that meet in a point at each end. The other is a four-walled, rectangular form. Almost all the steps for making the two types are the same.

Michael Cullen makes furniture and boxes in Petaluma, Calif.

Photos, this page and opposite (top left): John Tetreault

Two-walled box

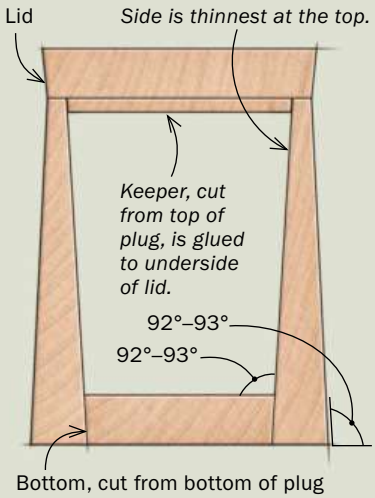
To make the two-walled box, start with a thick block of wood: 12/4 or 16/4 stock is optimal. Some of my favorite species for bandsawn boxes are basswood, walnut, mahogany, maple, and cherry. I carve and milk-paint many of my boxes, but I leave some unadorned.

Flatten the top and bottom of the blank, making the surfaces parallel. The sides don't have to be milled, but the glue-up will be easier if they are not too uneven. There's no required size for a blank, but one about 8 in. long by 4 in. wide by 3 in. or 4 in. tall would be good for a first try.

The first step at the bandsaw is to cut the lid from the block. Then set the lid blank aside and draw the shape of the box on the top of the box blank. These lines will define the interior of the box, so be sure to leave space outside the lines for the wall thickness.

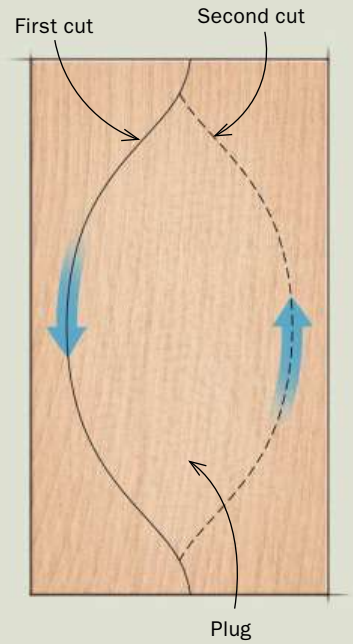
To saw out the interior, angle the bandsaw table roughly 3° off horizontal. A little more or less is fine. The idea is to make the interior cavity tapered—smaller at the bottom—so the tapered plug can be used to make a perfectly fitting box bottom. Saw steadily without rushing, so the blade tracks without deflection. The better the cut, the better the joints will be. I use a ¼-in. blade with 4 or 6 tpi (teeth per inch). With the cuts complete, bring the outer halves together. The joints at each end should mate with no light showing through.

CROSS-SECTION



THE FIRST TWO CUTS

Make the two cuts in opposing directions to yield a tapered plug.



1 INITIAL SAWING

Off with the lid. *After milling a block of wood, saw a slice off the top and set it aside—this will become the lid.*

Tilt the table. *After cutting off the lid, Cullen creates the interior cavity of the box by cutting a tapered plug from the blank. Set the bandsaw table a few degrees off horizontal before cutting out the plug.*

Two curving cuts. *For a box with pointed ends, two sawcuts are all it takes to shape the interior walls. Cullen makes a shallow test cut into the end grain to confirm that the blade is angled in the right direction and will yield a cavity that is smaller at the bottom.*

2 GLUE UP THE SIDES

Don't overdo the glue. *Apply the glue carefully to prevent squeeze-out inside the box, where it is very difficult to clean up.*

Hands before clamps. *To be sure the bandsawn joints line up perfectly, fit the halves together first with hand pressure. Hold them firmly together for a minute or two to let the glue tack before applying clamps.*

Glue up the sides, and when the glue has cured, drop in the plug. It should rest slightly below the bottom of the sides and form a perfect seal. Mark the plug where it emerges, then remove it and draw a second line at least ¼ in. above the first. With the bandsaw table still angled, cut along both lines to create the box bottom. Take a slice off the top of the plug to make the keeper for the lid.

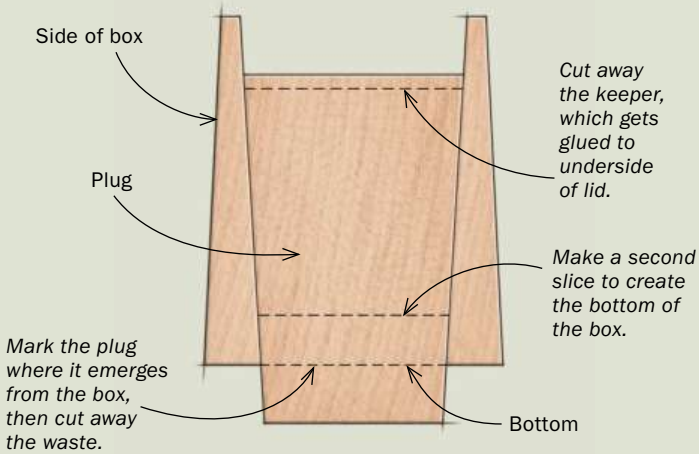
Cutting the outside perimeter of the box is easy: Use a pencil with one finger held against the inside surface of the box and trace around the cavity, then cut to the line. Walls that are too thick make a box look clumsy; I typically make them about ⅛ in. thick at the top, which gives a light, graceful feeling. For a wall that is thicker at the bottom, creating a solid look as on this box, you can leave the bandsaw table at the same tilt as for the inside wall but approach the cut from the opposite direction.

After gluing the lid keeper to the lid blank, put the lid on the box and trace the outside shape of the box on the underside of the lid. Then cut out the lid. I often make the cut so the lid flares outward. It looks good and makes the lid easier to grip. I usually fair the curves and smooth the bandsawn texture with rasps and files, and finish with sandpaper on a flat sanding block, beginning at 100 grit and ending with 400. For more aggressive shaping, I'll use the disk sander.

3 SLICE THE PLUG

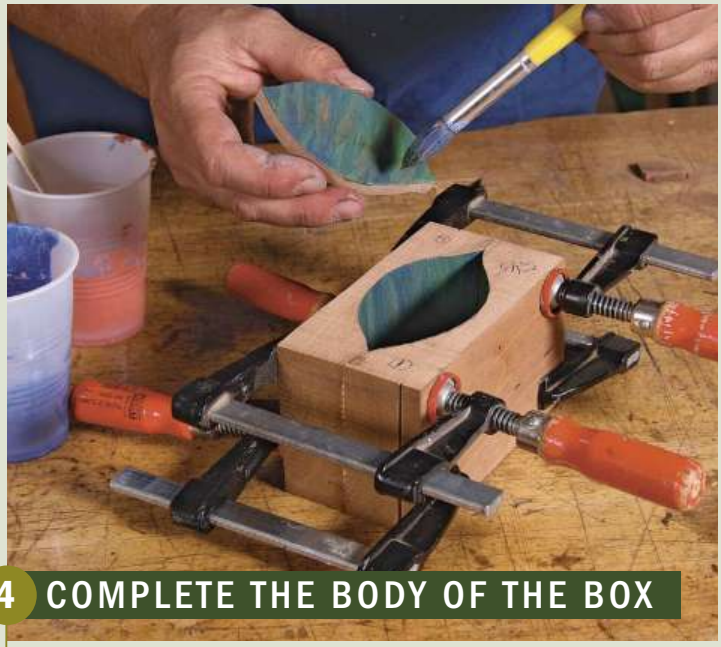
Mark the excess. *To create the perfectly fitting bottom of the box, first push the plug into the cavity and draw a line around it where it emerges.*

TAKE THREE SLICES FROM THE PLUG



Two cuts to get the bottom. *With the bandsaw table still angled, saw off the waste piece at the lower end of the plug, then take a second slice to make the bottom of the box. Last, cut a slice off the top of the plug—this will be the keeper on the underside of the lid.*

Photos, except where noted: Jonathan Binzen; drawings: Christopher Mills



4 COMPLETE THE BODY OF THE BOX

Color comes next. *If you'd like to paint the inside of the box, now is the time, while you have access from top and bottom. Paint the bottom as well.*

Free the box from the blank. *To create walls that are thicker at the bottom, leave the table tilted as before but approach the cut from the opposite direction.*

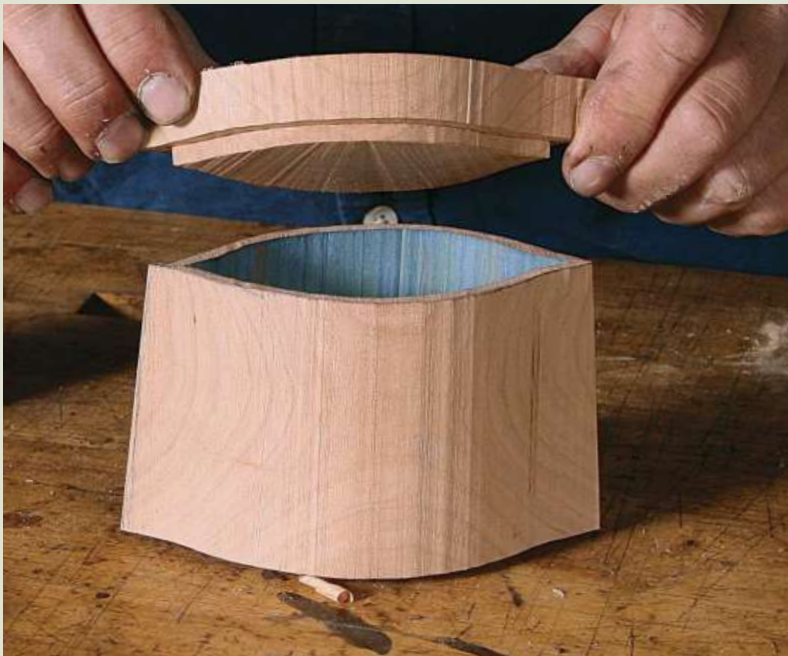
Pop in the bottom. *After brushing a narrow band of glue around the lowest part of the inside walls, drop the bottom into the cavity and press it into place.*

5 ADD THE LID

Locate the keeper. *Guided by a tracing of the inside of the box cavity, Cullen glues the keeper to the underside of the lid blank. He presses the keeper into place, holds it a minute, then clamps it.*

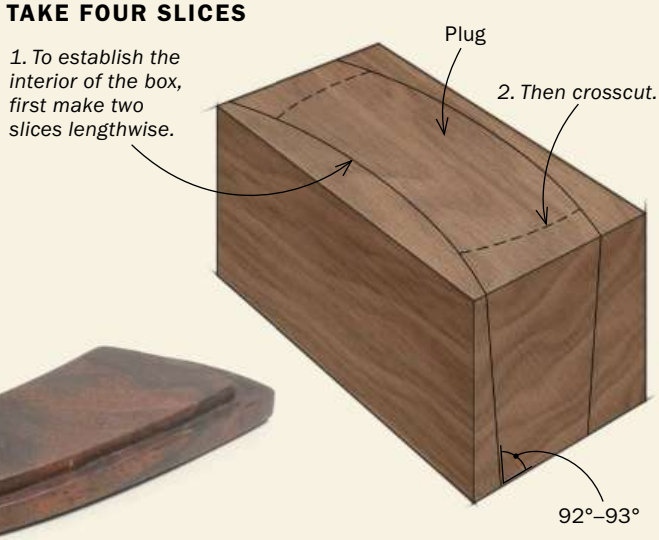
Sizing the lid. *After gluing on the keeper, fit the inverted box onto it and trace the perimeter of the box onto the lid blank. Then remove the box and saw out the lid.*

A fitting lid. *Cullen saws the lid at an angle opposite to the walls of the box. The flare looks good and also makes the lid easier to lift off (below).*



Four-walled box

TAKE FOUR SLICES



To make a four-walled bandsawn box, you'll follow nearly every step of the procedure for a two-walled box. The only real difference is in the pattern of cuts you'll make to the box blank once you've sliced off the lid blank.

After slicing off the lid blank, draw the design directly on the top of the box blank. Again you'll want the interior cavity to taper inward from top to bottom, so angle the bandsaw table a few degrees. Slice lengthwise through the block for the first cut, then the second. The blank will now be three long, narrow pieces. It's a good idea to mark them so they'll go back together in the correct order. Now crosscut the central piece at each end to define the ends of the box's interior.

The glue-up here is slightly trickier than for a two-walled box, and to keep the parts aligned during assembly I often do the glue-up around the plug. Be careful when applying glue to avoid squeeze-out, which could glue the plug in place.

From a blank to a box. *With the bandsaw table angled a few degrees, make the two long cuts first, then the short ones to create a four-walled box.*

Assemble around the plug. *Cullen uses the plug to help keep the parts positioned for gluing. Careful glue application and the kerf spaces at either end of the plug keep it from getting glued into the box.*

Saw the outside walls. *After glue-up, cut the outside walls to free the box from the blank.*

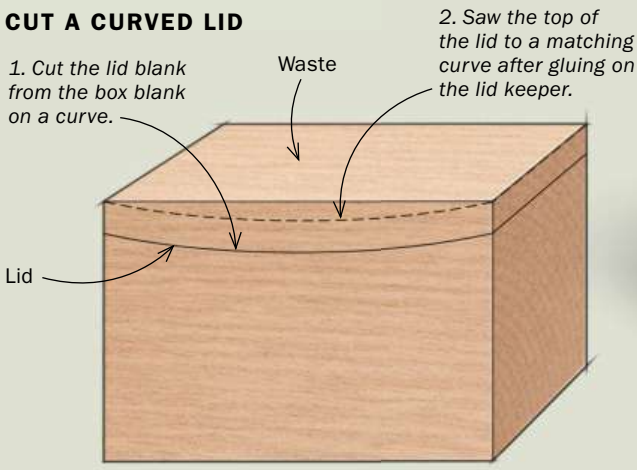
TIP

PLUG YIELDS MORE BOXES

Cullen often uses the plug from one bandsawn box to make a smaller nesting box. The plug he's holding above yielded two more boxes.

Saddled lid

CUT A CURVED LID



The lids of these bandsawn boxes are open to all sorts of variations. The box and its lid can be flat-topped, scooped, crowned, even wildly undulating. I made the lid for this mahogany box so it curves downward in the middle. The process tracks the steps for making a flat lid with just a couple of exceptions.

When I cut the lid blank from the box blank, I simply drew a curved line and followed it. Had I drawn a squiggly line, the lid would fit just as well. After cutting out the sides of the box, I sliced the lid keeper from the top of the plug, cutting parallel to the curving top face of the plug. I glued the keeper to the lid blank while the lid blank was still flat on top. Then I sawed the top of the lid to a parallel curve. I could just as easily have left it flat on top or sawn it to a wavy surface. Experimentation is the name of the bandsaw boxmaker's game.

Cut away the lid on a curve. *To make a lid that's dished end to end, cut the lid from the box blank on a curving line (right). After cutting the box apart, slice the keeper from the top of the plug, following a parallel curve (below).*

Press the keeper into place. *After applying glue—careful to stay well inside the perimeter line—press the keeper onto the lid blank and hold it a minute (left). Then add clamps, using the plug, which is sawn to the identical curve, as a custom caul. With the keeper glued in place, saw the top of the lid to a mating curve (below).*

Box photos, these two pages: John Tetreault

Turn a Spindle

The right game plan eliminates troublesome vibration and ensures crisp details

BY PETER GALBERT

Any spindle turning can be broken down into a series of recognizable shapes, but there's an art to making those shapes cleanly and with well-defined details. Over the years, I've developed a method that not only gives great results but also speeds up the process.

To demonstrate, I'll use a traditional baluster leg design from a Windsor chair. With multiple repeated details and shapes, this classic leg is the perfect candidate to illustrate all of the challenges of spindle turning. I'll use it to show the best order of operation.

After rough-turning the spindle, I start shaping the details in the center of the workpiece. Then I gradually trim away the excess material and shape the other features across the full length of the spindle, working toward the tailstock and then toward the headstock. This allows me to develop each section in relation to the others, which helps ensure good proportions. I use a full-size pattern to help me stay on track as I work. Turning a spindle this way not only eliminates troublesome vibration that can mar the work, but it also ensures accurate, repeatable results, making it a whole lot easier to turn matching furniture parts like chair legs.

By the way, if you want to learn the basics of each tool, how to rough out a turning blank, and how to form each type of shape, check out my two-part series on turning (*FWW* #231 and #233).

ROUGH IT TO SHAPE

Lay out the largest parts. *Galbert marks each feature using a full-size template (above). In this case it's a Windsor chair leg. Using a parting tool and calipers, establish the diameters of the thickest parts (right).*

Roughly shape the spindle

You'll come out with better looking turnings if you can visualize the overall design as you work, so develop a concrete idea of what you want to make before you start. I usually use a full-size drawing to create a pattern that I keep near the lathe while I'm turning. If you're replicating an existing part, use that instead. As you develop the details, periodically check your progress against the drawing, and note the sizes and spacing between each part of the turning—it will help you maintain nice proportions.

Start with a square turning blank a little thicker than the size of the final turning. Mount it between centers on the lathe. Set the lathe speed to 1,000 rpm and use a roughing gouge to shape the blank to a completely round cylinder. Now ramp up the speed to 1,200 to 1,500 rpm and target the largest feature of the turning. In this example it's the large vase. Set calipers to that diameter, then make a few sizing cuts across the blank with the parting tool and calipers. After that, use the roughing gouge to trim the whole blank uniformly to that diameter. Next, while the blank is spinning, use a pencil and a pattern or ruler to mark the largest features along the spindle's length—here it's the "transition" and the large and small vases. Use a pair of calipers and a parting tool to cut the

Then rough out the overall shape. *Begin to shape the large features with the roughing gouge. Use the same tool to remove the waste around the smaller-diameter parts. This step gets excess material out of the way, making the next step of parting easier.*

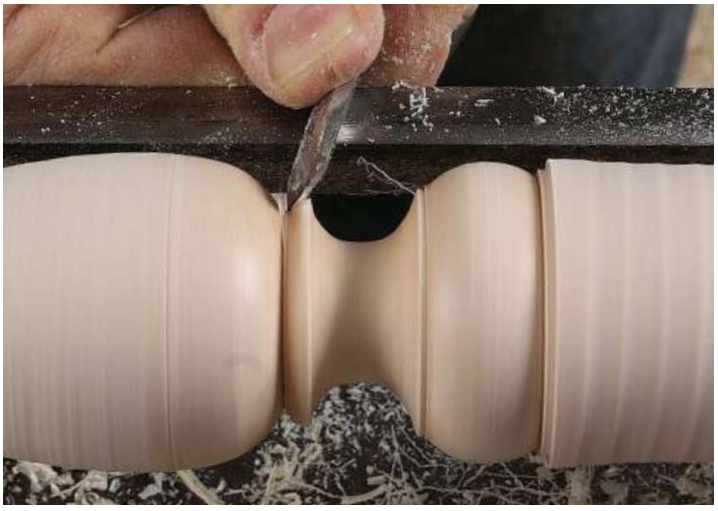
START SHAPING AT THE CENTER

Detail work. *With all the rough shapes established, use the pattern to mark the details (left). Part them to diameter, then slow the speed to 1,000 rpm and use a spindle gouge to start shaping the details, starting with the cove (above).*

diameter of each one. In addition to trimming the diameter of each feature, you can use the parting tool's ⅛-in. width to measure the length of details, and speed up and simplify the layout process.

Begin shaping the large features with the roughing gouge, trimming away the excess material. Starting the turning this way gets most of the roughing gouge work out of the way early and cuts down on time spent switching tools later. Be aware of how often you switch tools—it interrupts your concentration, so try to avoid it when it's not absolutely necessary. Instead, use the tool that's already in your hands for a wide variety of tasks. For example, a parting tool, spindle gouge, and skew chisel are all acceptable tools for shaping beads and V-notches. With a little practice, you'll become more versatile with each tool and work more efficiently, spending more enjoyable time "in the zone."

Next mark the smaller-diameter details of the spindle. For the Windsor leg example, these details are the center cove, fillet, and mushroom caps. Trim most of the excess material around them with a roughing gouge. This makes the next step of parting the small-diameter features easier, eliminating the need for deep cuts that can cause the parting tool to bind. Cut

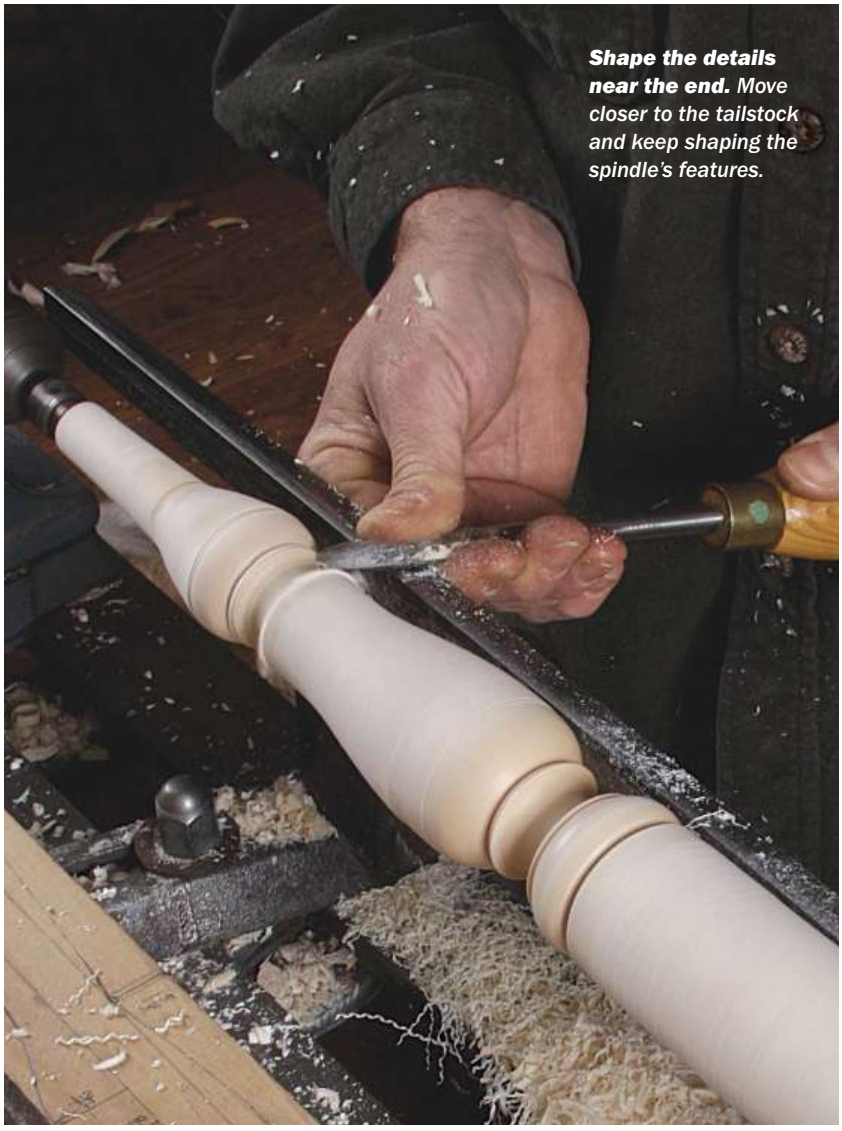


Skew chisel for the final smoothing. *To finish refining the mushroom cap and fillet on each side of the cove, use a skew chisel.*

Then the bead and V-groove. *With a few light skew cuts, the bead finishes taking shape, and a clean V-groove is formed next to it.*

Photos: Ben Blackmar

WORK FROM THE CENTER TOWARD THE TAILSTOCK



Shape the details near the end. *Move closer to the tailstock and keep shaping the spindle's features.*

Cut deep coves before nearby delicate details. *Galbert forms the mushroom cap after the deep excavating cuts that shape the cove—avoiding the potential harm they could do to a finished detail.*

Now shape the neck. *Leaving it thick kept vibration to a minimum while shaping the small details. Now use a roughing gouge to trim down and shape the neck, and finish it off with a skew chisel.*

small features to diameter with the calipers and parting tool. If you have a tapered workpiece, as is the case with the Windsor leg, cut the narrow end of the taper near the headstock last; otherwise you'll create a weak spot.

Shape and smooth the details

With the bulk of the hard work and waste material out of the way, slow the lathe to 1,000 rpm to create the fine details. As the spindle gets thinner, it's more likely to have vibration issues, especially near the center, so it's best to start there. For the Windsor leg that means shaping the center cove and mushroom cap with the spindle gouge. From there you'll form the cove and surrounding features near the tailstock. Before creating any fragile details, consider what's next to them, and which should be turned first. For example, in this case the thin mushroom cap next to the cove is likely to get broken while removing material from the cove, so create the cove first, then form the mushroom cap.

Once the small details near the center and the tailstock are done, finish shaping the large vase and narrow neck with the roughing gouge and then the skew chisel, blending the two elements into a graceful, flowing shape. Finish them with a smoothing cut using the skew chisel.

Now move back to the center of the turning and bring the tapered end down to size with the roughing gouge. Use the parting tool and calipers to cut the small end of the taper to diameter. Next do the final shaping and smoothing of the taper using planing cuts with a skew chisel. Before taking the turning off the lathe, remove the tool rest and sand the spindle with fine-grit paper to smooth out any tool marks. □

Peter Galbert makes chairs and stools in Sterling, Mass.

Shape the taper. *After sizing the small end with a parting tool and calipers, use a roughing gouge to remove the excess material and trim it to shape.*

This skew has smooth moves. *Next make a long planing cut, working downhill with the grain to smooth the tapered section of the spindle. Use a light touch with your other hand to steady the tool and dampen any vibration.*

Sand it smooth

To prep turnings for finishing, sand them while still on the lathe. First remove the tool rest and speed up the spindle, then use a light touch and let the lathe do the rest.

Smooth out the bumps. *With the tool rest removed, use 220-grit sandpaper to smooth out leftover tool marks. Sanding has an added benefit—the texture it leaves behind helps the finish adhere better.*

Curl it for the coves. *Folding the paper several times beforehand will add a little strength to the sandpaper.*

Clean up near details. *Fold a piece of sandpaper to sand right up to the details without rounding corners.*

Woodworkers on the Rise

From the 1970s through the 1990s, craft furniture flourished. The generation of woodworkers who learned from towering figures like James Krenov, Tage Frid, Jere Osgood, and Sam Maloof produced work of great diversity and distinction. But for the past 10 years or so, assessments of the woodworking field have been relentlessly dire. Studio furniture has been pronounced dead again and again. Like any other style, people said, it's had its day and now it's done. But a funny thing happened on the way to the graveyard—all sorts of younger makers have emerged, producing exciting designs and practicing impeccable craftsmanship. From Texas to Toronto and Brooklyn to Bellingham, backyard shops and urban co-ops are bulging with great young woodworkers. With our 40th anniversary at hand, we've taken the opportunity to present a handful of these young makers. We could easily have filled the entire issue with such work, and in the coming months you'll be seeing articles by others from this impressive new generation.

Coopered cabinet. *Blending technical challenges with artistic ones, Zietz built this collector's cabinet with coopered staves of quartersawn ash.*

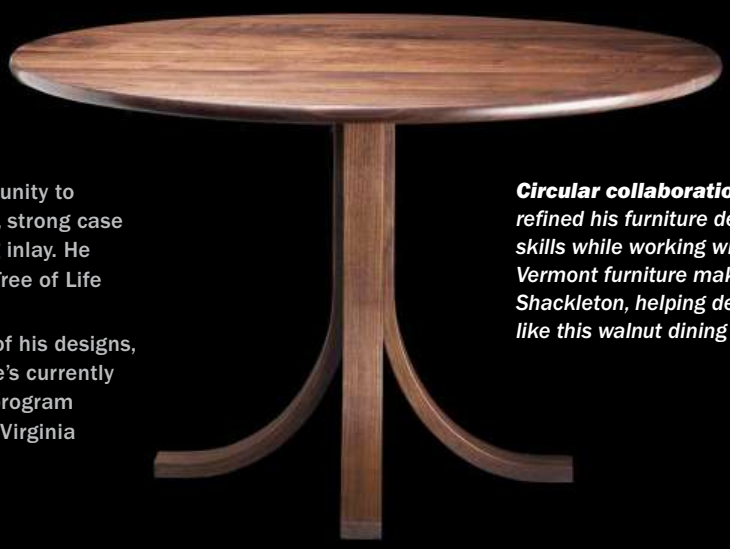
Jeremy Zietz

Jeremy Zietz is just 31, but he already brings a rich education and experience to his furniture making. Right out of college, where he studied industrial design, Zietz worked for five years in product design, helping develop medical devices, computer mice, sports equipment, and much else for international companies. The work was fascinating, but Zietz wanted to design on a more intimate scale and to make the things he designed. He took a nine-month course at the Vermont Woodworking School, and afterward got a job as a designer and craftsman with ShackletonThomas, a company in Vermont that sells its furniture across the country.

At the same time, Zietz took part in an informal mentorship program with Garrett Hack. Every three or four weeks for nine months, Zietz and a handful of other aspiring furniture makers would spend a day in Hack's Vermont shop. For Zietz, it was an opportunity to absorb Hack's approach to light, strong case construction and intricate string inlay. He applied what he learned to his Tree of Life chest of drawers.

Despite the accomplishment of his designs, Zietz is not finished studying: He's currently midway in a two-year master's program in wood and furniture design at Virginia Commonwealth University.

Chest of life. *Growing up in Chester County, Pa., Zietz admired the exuberant painted designs on early Pennsylvania German furniture; he decided to translate that boldness into a Tree of Life design executed in maple string inlay on his walnut chest of drawers.*



Circular collaboration. *Zietz refined his furniture design skills while working with Vermont furniture maker Charles Shackleton, helping design pieces like this walnut dining table.*

courtesy of ShackletonThomas; Jonathan Linzen (portrait)

Six superb makers from the current bumper crop

BY JONATHAN BINZEN

Elia Bizzarri

Elia Bizzarri has been avidly working wood since the age of 8, when he started watching Roy Underhill on *The Woodwright's Shop* (which aired right after Bizzarri's other favorite show, *Mr. Rogers*). Home-schooled by his mother in what he says was "a very free process," Bizzarri spent years making things in wood by trial and error while using the family picnic table as his workbench and the backyard as his shop. When, at 16, his parents bought him a pre-fab shed as a woodshop, "I thought I'd died and gone to heaven," he says. "It was an amazing vote of confidence."

That same year, he took a ladderback chair class with Drew Langsner at Country Workshops in North Carolina. The following year, at 17, he studied chairmaking with John (now Jennie) Alexander, author of the seminal book *Make a Chair from a Tree*, and with Curtis Buchanan, the eminent Windsor chairmaker in Jonesborough, Tenn. Watching these masterful makers in action was, Bizzarri says, "the coolest thing I'd ever seen—I soaked up all the knowledge."

Over the next five or six years, in a sort of serial apprenticeship, Bizzarri returned to work with Buchanan many times, sleeping in the loft of his small shop and cooking with a burner on the benchtop.

These days, in the shop he built himself in Hillsborough, N.C., Bizzarri produces a range of Windsors, some built to Buchanan's versions of traditional designs. "Curtis has spent 30 years tweaking his chairs," Bizzarri says, "and they're so pretty—I can't think of any way to improve them." Bizzarri also makes contemporary chairs and tables of his own design along with chairmaking tools and supplies. At 31, he's now a formidable maker and teacher himself, having taught at prominent programs including North Bennet Street School and the Center for Furniture Craftsmanship, and having been featured, fittingly, on two episodes of *The Woodwright's Shop*.

Period apprenticeship. *In his late teens, Bizzarri served an informal apprenticeship with Windsor chairmaker Curtis Buchanan. A decade later, Bizzarri builds impeccable chairs, many to Buchanan's traditional designs, and has become a teacher himself.*

Photos: Alec Himwich

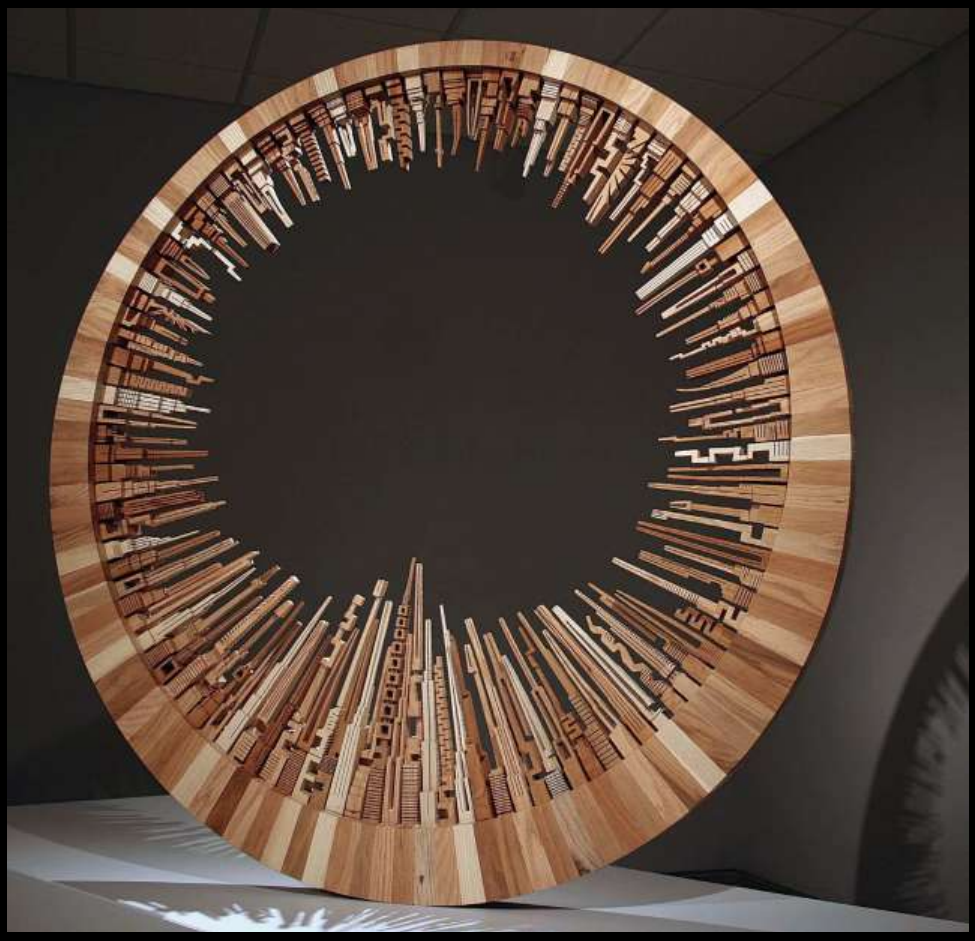
James McNabb

"At moments of frustration," James McNabb says, "I try to just shut off my brain and make something." One evening in the spring of 2012, McNabb got frustrated. He was four months away from his master's thesis exhibition at Indiana University of Pennsylvania, and struggling with new designs; he couldn't figure out how he would fill his show. "As a coping mechanism," he remembers, "I took a few scraps of wood and went to the bandsaw. I just started cutting pieces spontaneously. When I put a few down in a row, all of a sudden they looked like architecture—little abstracted cityscapes."

Each tiny freehand edifice gave him more momentum, and he worked right through the night, sawing out 200 before he stopped. Four months later, his entire show was populated with bandsawn buildings.

Before his revelation that night at the bandsaw, McNabb had been headed toward a career as a custom furniture maker. He'd spent his undergraduate years in the furniture program at Rochester Institute of Technology, where "they breed a super high caliber of craftsmanship, and I gravitated to that philosophy." But soon after sending photos of his bandsawn buildings to the design blog Colossal, his life took a sharp turn. The work went viral, and before he knew it, McNabb had an art gallery representing him, the *New Yorker* magazine commissioning a bandsawn Manhattan and running a full-page photo of it, and as much work as he could handle.

Now 30 and working in a shared shop in Philadelphia, McNabb says he could never have predicted the course things have taken, but he's not looking back. And he doesn't miss the stress of designing furniture. "Part of the point of the bandsawn work," he says, "is the spontaneity—no drawings, no patterns—it's like sketching with a bandsaw. Each building is like a little meditation."



From scraps to sculpture. *Launched on a whim, McNabb's series of bandsawn buildings has blossomed into a career in the fine arts. With clients around the world seeking his sculptures, McNabb still saws out each building freehand and without drawings—an exercise in spontaneity.*

Libby Schrum

Libby Schrum, 37, lives in the small, bustling-in-the-summer seaside village of Camden, Maine, and builds custom furniture in a purpose-built shop attached to her house. Her furniture is inspired by the clean lines and planar forms of Mid-Century Modern pieces, as well as by the simplicity of Shaker furniture.

Growing up in Texas, Schrum had two passions: art and sports. Aiming for a career as a basketball coach, she studied sports management in college. But when her dream of coaching faded, she wasn't sure where she was headed. Then, for an art class assignment, she designed a bed, and though she had never given furniture a thought before, she realized she'd love to be able to build what she had designed.

Searching online, she came across the Center for Furniture Craftsmanship and signed up for a 12-week class, making the trek from Texas to Maine in the spring of 2001. She fell in love with Maine as well as with working wood, and stayed on at CFC for a summer assistantship and then for a yearlong studio fellowship. After wandering down the coast for a master's program at Rhode Island School of Design ("which was all about concept"), Schrum returned to Maine and spent several years working in local boatyards and cabinet shops before opening her furniture business in 2010.

Mid-Century Modern meets its maker. *Schrum blends a passion for beautiful craftsmanship with an eye for Mid-Century design. Her coffee table in white oak and her liquor cabinet in white oak and wenge exemplify the pairing.*

Two schools of thought. *Schrum was inspired by the bold geometry of Mid-Century furniture while studying at the Rhode Island School of Design. She credits The Center for Furniture Craftsmanship, in Maine, with developing her skills as a maker and designer. Both influences are evident in her occasional table (left) in veneered bamboo plywood and paint, and her desk in zebrawood and maple.*

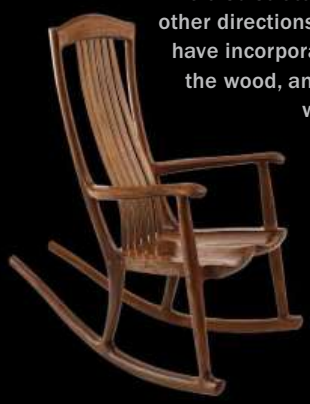
Photos, facing page: James McNabb (top three); Aurelie Laurent, Petit Jules (bottom); this page: Jonathan Binzen (portrait) Libby Schrum (top three); Jim Dugan (bottom left); Chris Pinchbeck (bottom right)

Tor Erickson

Tor Erickson grew up in the woodshop, watching—and later helping—his father, Robert Erickson, build the chairs that established his sterling national reputation. Robert, who was raised in Nebraska, found his way to northern California in the late 1960s and there, on a way-off-the-grid communal property near Nevada City, built the house and shop where Tor grew up and learned to work wood.

Tor, now 36, was an only child, and has always been attracted to designing and making things, from dams in the nearby stream as a boy to water systems in Uganda while working for a relief agency as a young man. And he always enjoyed stints working in the woodshop. But through his 20s, as he spent much of his time working as a carpenter, it wasn't at all clear that he would wind up working with his father full-time.

After college in Iowa, where he studied history, Tor returned to California and worked as a carpenter. Two and a half years ago, however, he came to a crossroads. "My dad and I had a talk, and I asked him whether, if I did get more involved, he'd be open to my ideas—open to making some changes." The answer was yes, and father and son have been working together since, continuing to produce many of the chairs and tables Robert has developed over the decades while also stretching the business in other directions. At Tor's urging they have incorporated more metal with the wood, and have also worked with solid burls, veneer, and stone.



Like father, somewhat. *Since becoming a partner in his father's business, Tor Erickson has pushed to reinterpret some classic Erickson chair designs, using materials like California walnut burl.*

Photos: Iker Basterretea (portrait); Robert Erickson (bottom left); Tor Erickson (all others)

Martin Goebel

Martin Goebel, 33, is trying to crack a very tough nut: how to make traditionally joined, solid-wood pieces that will last lifetimes—for half of what most custom furniture makers would charge. The route he's chosen to reach his goal is automated technology. Most of the 300 or so pieces that emerge from his St. Louis shop each year are made in batches with parts shaped to his 3-D CAD drawings by local companies with CNC routers and lathes. When the parts are ready, they return to Goebel's shop for assembly and finishing.

Far from being apologetic about the robotic assistance, Goebel feels it's essential to making a living in the field. "I think there's a disconnect," he says, "between handmade furniture and furniture that people actually buy." And his viewpoint is hard-won. At age 19, having feasted on James Krenov's books, he traveled to northern California to attend Krenov's furniture-making program at the College of the Redwoods. Afterward, he spent six years working solo, making custom furniture and selling through galleries. The extremely long hours and very low return "took the joy out of it for me," he says.

So in 2008 he headed to Rhode Island School of Design, writing a master's thesis called "Synthetic Craft," a roadmap for automated production of fine furniture that he still follows. Since returning to St. Louis and setting up Goebel Co. in 2010, he's found that CNC production enables him to focus more on design. He says the "iterative process"—designing and building numerous prototypes and versions of a piece—leads to far greater refinement in the final design. But, he says, "CNC is not a silver bullet. It's just the next tool in the toolbox. Used unwisely, it's a good way to screw up a whole lot of material faster."

Comfort shaped by machine. *Goebel's Luna chair, with its lowered rear seat rail and woven webbing, is designed for pure comfort. Its parts are milled by shops with CNC machines, then assembled, sanded, and finished in Goebel's workshop.*

Making heirlooms affordable. *Although deeply trained in handwork himself, Goebel relies on CNC routers and lathes to shape the parts of many of his pieces, which lets him build in batches and bring down prices significantly.*

The custom component. *Although he's committed to creating most of his furniture in numbers using digital technology, Goebel still makes some one-of-a-kind pieces as well.*

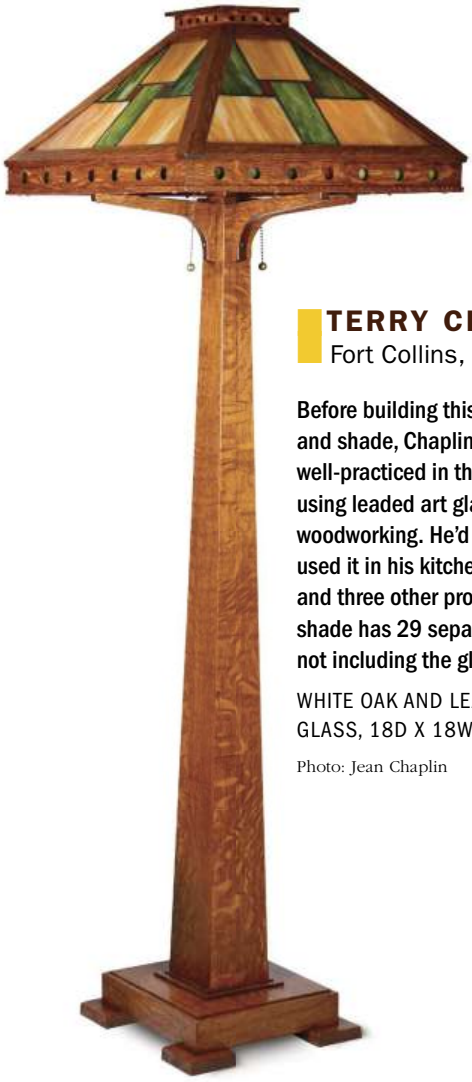
Photos: Noah Alexander

gallery

CHAD HILL
Fredericksburg, Va.

The walnut for this sideboard came from Hill's neighbor, whose woodworker father had passed away. "My neighbor wanted this material to go to good use, as his dad had been storing it until he could come up with that perfect project for it." So Hill designed the sideboard, incorporating a live edge in the backsplash and the front edge of the top. "I'm not really a huge fan of a live edge, but in this case I felt it complemented the piece well."

WALNUT AND WHITE OAK, 15D X 58½W X 36H



TERRY CHAPLIN
Fort Collins, Colo.

Before building this lamp and shade, Chaplin had been well-practiced in the art of using leaded art glass in woodworking. He'd already used it in his kitchen cabinets and three other projects. The shade has 29 separate parts, not including the glass stops.

WHITE OAK AND LEADED ART GLASS, 18D X 18W X 59H

Photo: Jean Chaplin

MAX MACSAI KAPLAN
Fort Bragg, Calif.

This chair is part of a living room set that Kaplan designed. "It began, as many do, with drawing—lots and lots of drawing—and for this chair it was all about the side profile." He says the chair and the settee that goes with it are quite comfortable. "The back is just present enough to allow you to relax."

MADRONE AND FELTED WOOL, 24D X 22W X 31H

Photo: David Welter

JOSEPH MURPHY
Madison, Wis.

Murphy designed this console table for a customer who wanted a striking piece for a prominent place in his modern home. The legs are bent laminations, eight plies in total (four in each "half" of the leg). "For me, the legs conjure up an odd mix of chemistry and fashion, so I call this thing 'Erlenmeyer's Slacks.'" (If you haven't taken chemistry lately, Google "Erlenmeyer flask." You'll see the resemblance.)

QUILTED MAPLE AND WALNUT, 15D X 68W X 35H

HUGH BUTTRUM
Sonoma, Calif.

Buttrum likes to display his turned bowls in stacks. "People have a fun reaction to a stack of bowls that are each different. They smile and then try to pick the one they like best." He roughs out the bowls from green wood, then re-turns them after they've dried for a year or so. The finish on the colored bowls is milk paint.

FROM TOP: MADRONE, CLARO WALNUT, MADRONE, ENGLISH WALNUT, MADRONE, ALL APPROX. 8 IN. DIA.

Photo: Tyler Chartier

SHANE JIMERFIELD
Grants Pass, Ore.

Local woods from Oregon's wine country inspired this wine cabinet. "I wanted the design to highlight the different woods and the beautiful, unique grain patterns found in these particular timbers." The top and legs are eucalyptus harvested from a tree that fell in a northern California park, the face and backsplash are black oak from Oregon's Applegate Valley, and the pine interior is from an old tree that came down on private property in the valley.

RED GUM EUCALYPTUS, BLACK OAK, SUGAR PINE, AND OAK APPLEPLY, 17D X 42W X 45H

Sharpen your own backsaw

IT'S EASIER THAN YOU THINK

BY MARK HARRELL

INEXPENSIVE TOOL KIT

You'll need a flat, bastard-cut mill file, a tapered triangular saw-sharpening file, and two small Arkansas honing stones, sold for knife sharpening.

If you can sharpen a plane iron, you can sharpen a sawtooth. There's a lot of information online about tooth geometry, and it can be valuable for folks like me who sharpen saws every day, some of which are heavily damaged. But that level of detail is overkill for most woodworkers, who simply need to sharpen a Western-style backsaw that is in good shape but dull.

Maybe you have a nice vintage saw, or you purchased a great new model a few years ago and it's time to freshen up the teeth. In these situations, you can simply replicate the original sharpening angles and make things easy on yourself. But you can use my methods to resharpen almost any backsaw—be it a tenoning or dovetail saw sharpened for rip cutting, a dedicated crosscut saw such as a carcase or miter saw, or an all-purpose saw with a hybrid pattern.

Wondering if your saw is dull? If you have to apply downward pressure to get the saw to cut—in other words, if the weight of the saw is not enough on its own—your saw needs sharpening.

Tools of the trade

You don't need many specialized tools to sharpen a saw. You can turn any vise into a saw vise with two pieces of angle iron and two strips of leather (shown at right). You need to see the small teeth very clearly, and it is easiest to keep your body position (and your filing angle) consistent if you are standing. Therefore, the closer the vise is to your chest height, the easier things will be. This is why I use a machinist's vise, which stands taller than a woodworking vise (and can be raised with blocks underneath).

You need two files to sharpen a saw: a flat bastard, or single-cut, mill file and a triangular tapered saw file. Choose the smallest saw file that will do the job. Too much file sticking up above the tooth line will make it harder to settle into the gullets and match the angle already there. For safety and control, put handles on your files. Last, you need a couple of Arkansas whetstones, one soft and one hard, used for sharpening knives and sold at hardware stores. Waterstones are too soft for the job.

Mark and joint the teeth

You'll be sharpening alternating teeth, working first from one side of the blade and then the other, so before you start you'll need to mark them as a visual aid, dotting the ones leaning away from you (see photo, above right). After

Photos: Asa Christiana

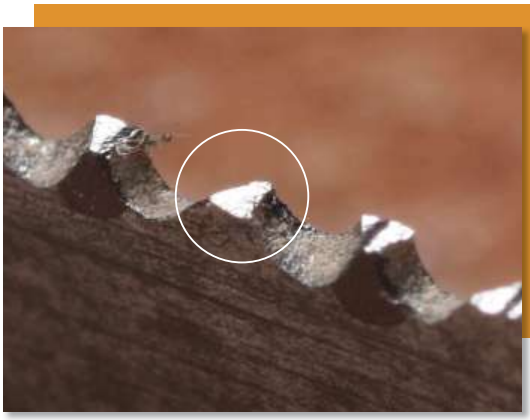
JOINT THE TEETH FIRST

Lose the handle. *To clamp the entire saw plate in the vise and keep the tooth line rigid, you'll need to take off the saw's handle. Use a large, flat screwdriver tip so you don't damage the screw slots.*

Mark the teeth now. *Use a marker to dot the teeth that are leaning away from you. Then flip over the saw and do the same on the other side, coloring the remaining teeth.*

Clamp the blade. *Most people don't have a traditional saw vise, but you can convert any vise by adding temporary jaws, made from angle-iron lined with leather.*

Joint the teeth. *Filing creates a level reference surface for the rest of the sharpening process. Use a flat, bastard-cut mill file, keeping it level as you push it from heel to toe.*



WHAT TO LOOK FOR

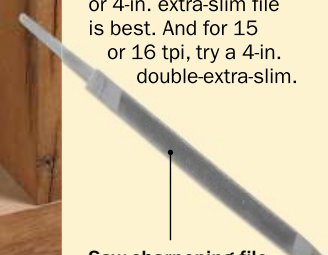
Stop when most or all of the teeth have at least a tiny flat on the tip.

FILE EVERY OTHER GULLET

Mount the vise chest-high if you can. Keep your elbows tucked in, and take baby steps every 6 or 8 teeth, so you don't stretch out your arms and lose your visual and muscle memory. An adjustable light is very helpful.

THE RIGHT SAW FILE

For faster cutting saws with 10 to 12 teeth per inch (tpi), buy a 6-in.-long "double-extra-slim" file. For 13 or 14 tpi, a 5-in. double-extra-slim or 4-in. extra-slim file is best. And for 15 or 16 tpi, try a 4-in. double-extra-slim.

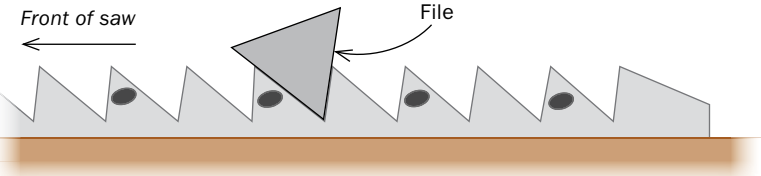


Saw-sharpening file, 4 in., double-extra-slim
$9; leevalley.com

Wiggle the file into place. *When using the saw file, the goal is to match the sharpening angle that's already there.*

FILE BEHIND THE DOTS

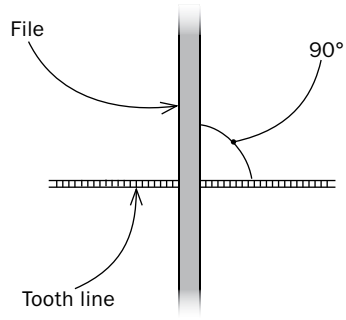
With the teeth facing left, you want the file to the right of the dots as you go. The natural filing action will equally sharpen the back of the tooth that's bent away from you and the front of the other tooth.



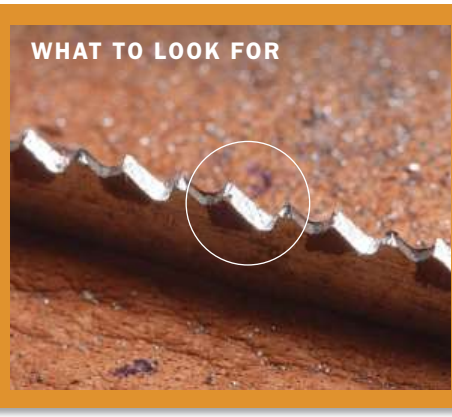
Light, heavy, light. *Keep the file level as you take two or three light strokes. Then take a look. You should see a nice even facet on the back of the dotted tooth. Then take a more firm stroke, and one last light stroke if needed.*

90° FOR A RIPCUT

For dovetail and tenoning saws, a standard ripcut is great. Keep the file 90° to the tooth line.



WHAT TO LOOK FOR



The back of the teeth are easiest to see, so look there for one shiny facet, which means you nailed the angle. Second, since you are filing every other gullet, you need to remove only about half of the tiny flats on the tips of the teeth at this point.

Drawings: John Tetreault

that, the first sharpening step is to joint the tooth line, creating a line of flats on the tips. This will create a visual reference as you file the gullets, ensuring that the finished height is consistent and each tooth takes a similar bite.

Remove the handle and clamp the saw plate so the tooth line is about ½ in. above the vise jaws. Lay a mill file on top and push it along the tooth line in one fluid, gentle motion. Don't go too far chasing perfection. There is often a low tooth, or two or three, that you can ignore. If you try to bring the whole tooth line down to that level, you'll remove way too much material.

The geometry of saw sharpening

Now lower the saw plate in the vise so that the teeth are only about ⅛ in. above the jaws. The best way to understand saw sharpening is that you're not sharpening teeth, you're filing gullets (the V between the tips). The front of the tooth does the cutting, of course, but the only way to ensure consistency is to file the entire gullet, removing material from each side. However, because the back of a tooth is longer and more horizontal than the cutting edge, it is more visible, so that's where you will focus when checking your work. And that's always the tooth with the dot on it.

There are three basic angles to sharpen at, depending on how the saw will be used. If you think about the numbers on a clock, knowing how to position the file becomes more intuitive. Keeping a consistent angle is far more important than what the exact angle is. In each case the file will be level with the floor; it's only the lateral angle that varies.

The other important angle is the rake, which refers to how aggressively the front of the tooth is pitched forward, and thus how aggressively it will cut. Since you are sharpening a good saw, not rehabbing a damaged one, you simply match the manufacturer's rake. Nestle the tip of the file in the first gullet, and rotate it lightly until you feel it settle into place.

Three strokes per gullet: light, firm, light

Regardless of the sharpening angle, the filing action is the same. In one fluid stroke, lightly pass the file through the gullet.

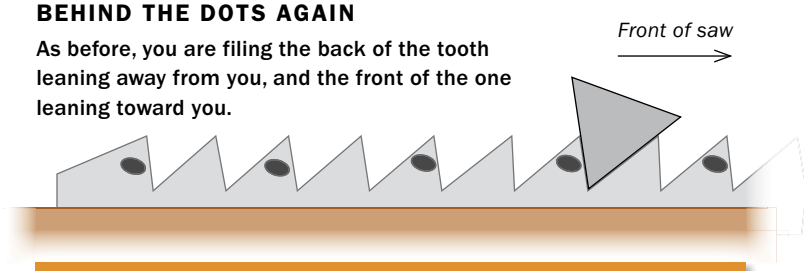
FLIP THE SAW AND REPEAT

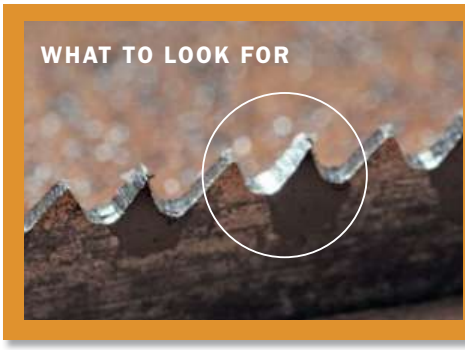
After turning it around, the teeth will be facing right.

Same technique. *Settle the file into place and take a light stroke. If the angle looks right, take a more assertive stroke. If the little flat at the tip isn't gone yet, take another light stroke.*

BEHIND THE DOTS AGAIN

As before, you are filing the back of the tooth leaning away from you, and the front of the one leaning toward you.

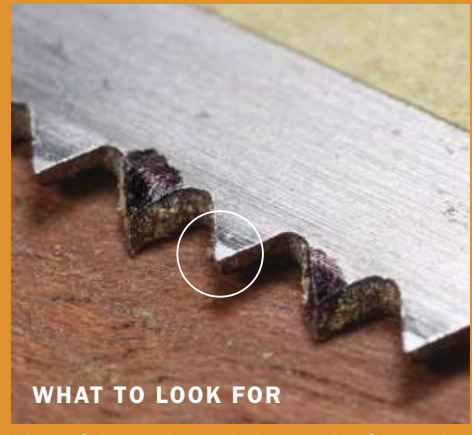




The flats at the tips should be almost gone, and all of the teeth and gullets should be symmetrical. Now go down the tooth line one or two more times, fine-tuning it to create the perfect sharpening job.

STONE THE SIDES FOR A SMOOTH CUT

With painter's tape protecting the blade, go over both sides of the teeth lightly with a coarse and then a fine Arkansas whetstone. Stoning evens out the set of the teeth and removes the burrs created by filing, dramatically improving the quality of cut.



Most of the teeth should have a tiny flat on the sides.

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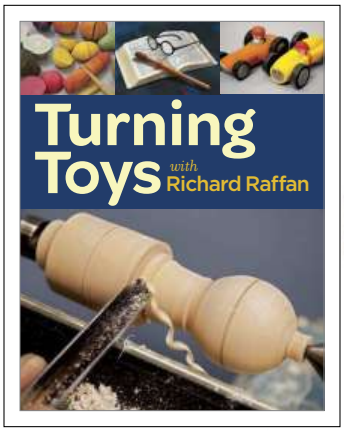

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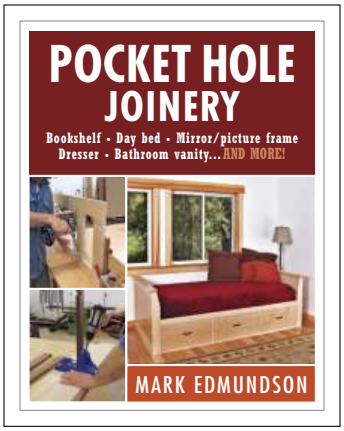

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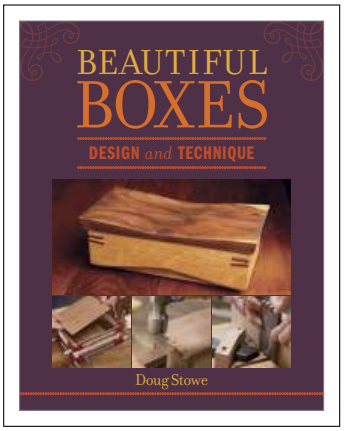

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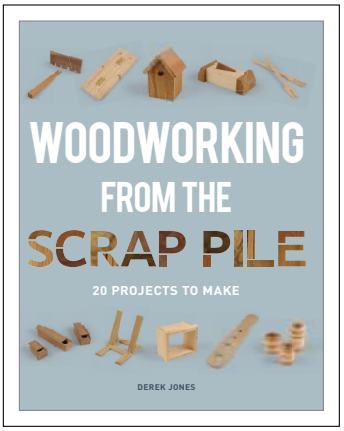

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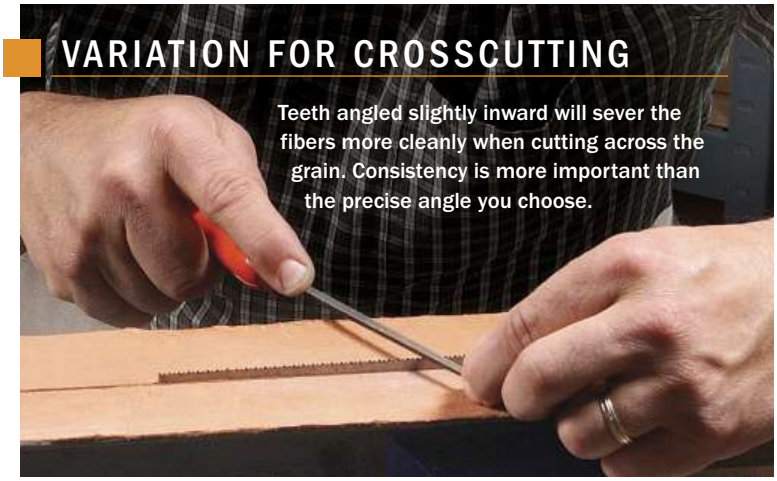
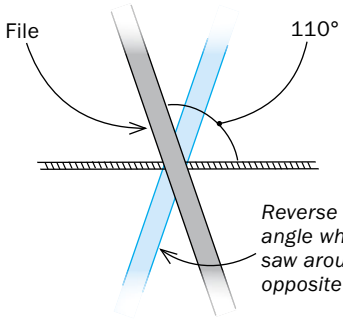


File at a slight angle. *Be sure to reverse the filing angle when you flip the saw over, so the cutting edges of the teeth face inward.*

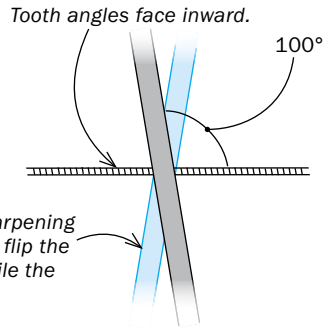
TRUE CROSSCUT

For a dedicated crosscut saw, file the teeth at about 20° off the 90° rip pattern.



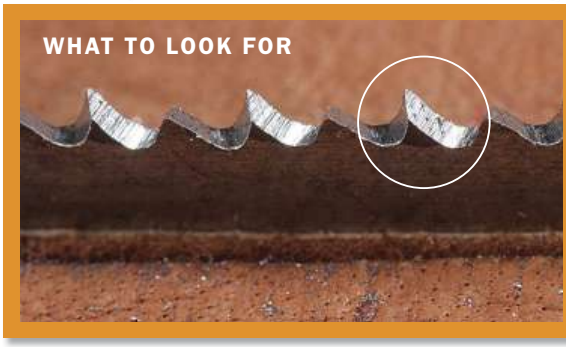
HYBRID TOOTH PATTERN

For an all-purpose saw, file at a less severe angle, just 10° off 90°.



Reverse the sharpening angle when you flip the saw around to file the opposite side.

WHAT TO LOOK FOR



The filing angles are different here, but everything else is the same. Again, you are done sharpening when the little flat disappears on each tooth.

A taper file is narrow at the tip and broadens down the length, so it grinds both sides of the gullet equally.

Take a moment to look at what you've just done, examining the back of the tooth with the dot on it. If you remained true to the manufacturer's rake, you'll see a new, gleaming facet from top to bottom. If you rocked your file too far clockwise, you'll see your work concentrated more toward the tip, or vice versa. If necessary, make a subtle adjustment and take another light pass.

Once you've established a consistent facet, you've also established a few seconds of visual and muscle memory. Now push the file through the gullet in one, smooth, assertive stroke. Don't grind down hard—let the teeth do the work. The goal is to remove about half of the flat you jointed on the tooth with the dot. Don't overdo it; you'll be hitting that tooth's other surface when you sharpen from the other side.

At that point I often take one more very light stroke, for a few reasons. It removes most of the burr left by the more aggressive stroke, it removes a bit more of the flat if needed, and it sets up my muscle memory for the next gullet. You'll develop a nice rhythm in no time.

The back side and beyond

When you have completed the first run down the tooth line, release the vise and flip the saw plate so that the heel is to the left. This time, stay to the left of each tooth with a dot on it (see drawing, p. 84). That will ensure that you once again are sharpening the back of the tooth facing away from you, and the front of the tooth that is bent toward you.

This time, the goal is to remove most of the remaining flats on the tips of the teeth. All of the gullets will be close to the same depth now. But don't try to achieve perfection with only two flips of the plate. When I am done with the first and second passes, on alternating sides, I always flip the saw for a third and fourth pass, just lightly brushing the teeth that need refinement. Only sharpen the teeth with remaining flats, and look for tooth and gullet symmetry. Remember, don't worry about one low tooth, or two or three.

Once you're happy with the tooth line, there is one last important step—stoning the sides of the teeth to even out the set. This creates a microfacet on the cutting edges and removes burrs caused by filing. If you have dial calipers, you can check the amount of set. The goal is a toothline about 0.007 in. wider overall than the blade plate. After this step, when you test-cut a chunk of white oak, you'll find the action easy and the end grain almost glassy.

Have faith in your ability. A timid and hesitant approach can grind teeth out of symmetry. A light, swift, brushing stroke forgives the occasional mistake. □

Clean crosscuts. *The crosscut pattern will produce tearout-free cuts across the grain, while the hybrid pattern is a nice compromise between fast rips and clean crosscuts.*

Mark Harrell makes and sharpens handsaws professionally (BadAxeToolworks.com).

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Curved doors, simplified

VENEER OVER SOLID STAVES IS THE KEY TO SUCCESS

BY TIMOTHY COLEMAN

Much of my work consists of veneered surfaces. As a substrate for flat panels, I use high-quality veneer-core plywood, but when I am working with curved or tapered surfaces, thick sheet goods don't fit the bill. In the past I have bent multiple layers of thin flexible plywood or resawn veneer over a form to create a substrate. But I often had a difficult time keeping the finished panels from distorting. With close-fitting cabinet doors, even a slight twist is quite noticeable. I am always open to new techniques, but it was an old one—and a step back in history—that led me to an alternative method.

In 2011 I had a commission to re-create two large tables for a Frank Lloyd Wright house. The original tabletops were veneered over a lumber-core substrate, with a thick, mitered solid-wood edge around the perimeter. You'd think that any movement across the width of the top would have broken apart the miter. But on this 100-year-old table, the miters were as tight as the day they were assembled.

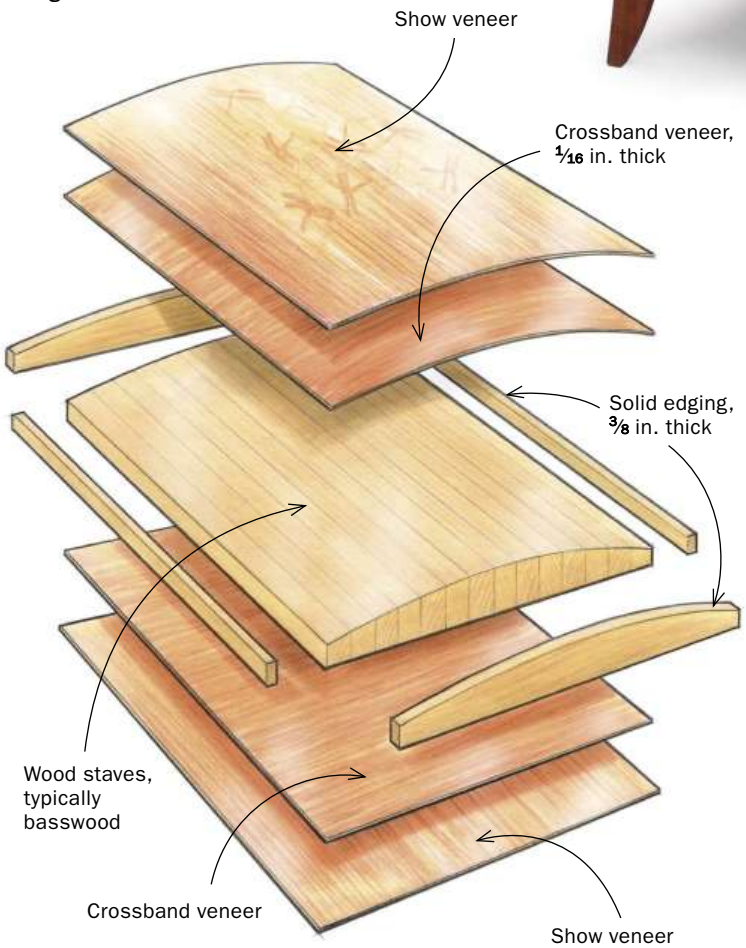
This experience convinced me of the stability of lumber-core plywood, and led me to think about the possibilities of using it in my own work. I realized that a solid-wood core could be cut and shaped to suit a variety of curved and tapered forms, and I have since used it successfully on numerous projects.

Here I'll illustrate how I make curved doors using shopmade lumber-core plywood. The process is relatively simple, and because only the front of the door is curved, the jobs of fitting and installing hinges are no more difficult than on a flat door.

Timothy Coleman is a renowned furniture designer and maker in Shelburne, Mass.

LUMBER-CORE PLYWOOD WITH A TWIST

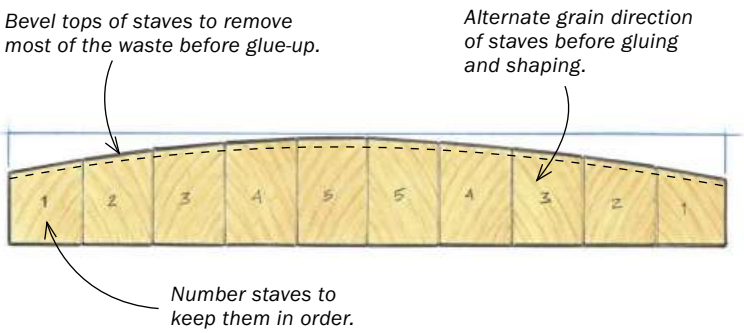
Coleman's curved-front doors feature a solid-wood core sandwiched between veneers. The first layer of veneer on both sides is oriented perpendicular to the core's grain, which effectively restricts movement of the staves and creates a stable panel. The assembly is edged with solid wood.



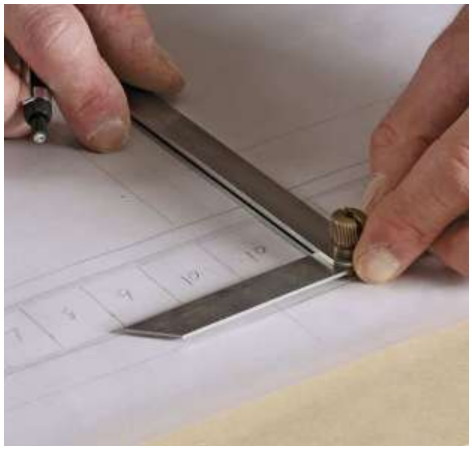
Top photo: Dean Powell; drawings: Dan Thornton

Build the core

When making the core, Coleman uses a full-size drawing of the door panel's cross section to mill the stock to thickness. He uses that same drawing to guide the shaping and to keep track of parts.



Rip 'em. *After milling the stock to thickness, cut enough 1-in.-wide staves to make the door panel. Rip plenty of extra staves and discard any that are excessively bowed or twisted.*



Get an angle on the staves. *Set a bevel gauge to closely match the curve along the top of each stave.*

Each one gets a mark. *Transfer the bevel angle to the end of the stave. Number the stave at this time to match the drawing.*

Remove the waste. *After marking all the staves, get a head start on the shaping by beveling each one at the appropriate angle.*

No clamps needed. *Coleman glues the staves together with just a few small beads of glue and uses tape rather than clamps. This method leaves small gaps, which allows for fractional movement between the staves. He works quickly, assembling the panel in smaller sections by stretching the tape across the joints. Then he glues the subassemblies together.*

Photos, except where noted: Thomas McKenna

Create the curve with hand tools

To flatten the back and to shape the curve in front, Coleman uses a combination of handplanes, spokeshaves, scrapers, and coarse sandpaper. The curve and thickness must be right on the money, because once the crossband layer goes on, no further shaping is possible.

Flatten first. *Use a smoother or a jack plane to flatten the back. To keep the core from rocking, Coleman places shims under both sides. Don't worry about getting a perfectly smooth surface; it just has to be flat. Check your progress with a straightedge (right).*

Fair the face. *Use handplanes to shape the curved face of the core. For smaller panels like this one, Coleman uses a block plane. Then use coarse sandpaper (80-grit) to finish it off.*

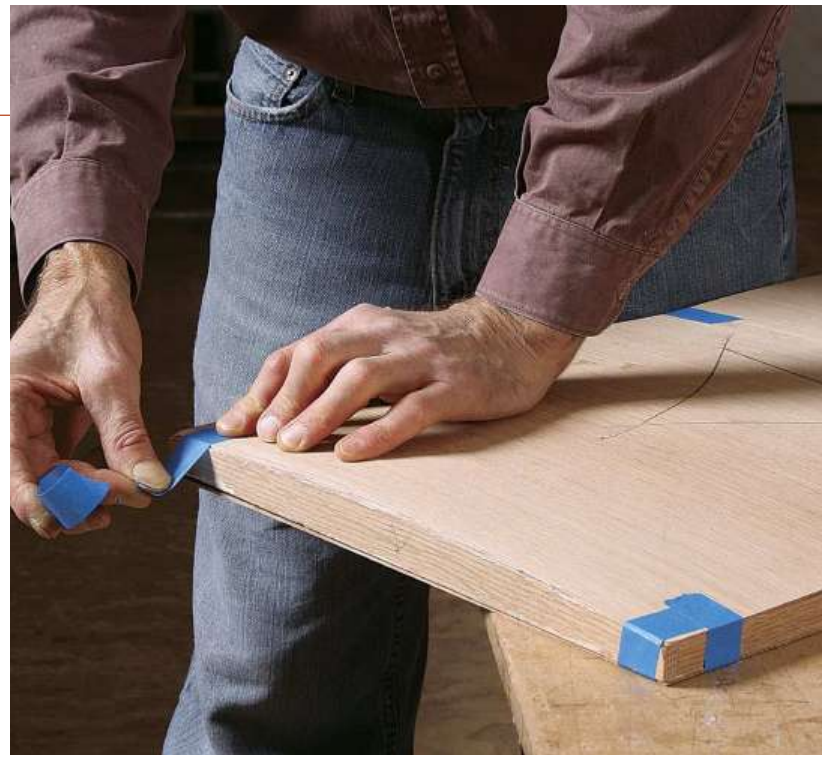
Feel for high spots. *You don't need a glass-smooth surface but there can't be any high spots or bumps. The best way to check for these imperfections is with your hand.*

Check for consistency. *The panel's thickness along the edges must be consistent to avoid problems when you hang the door. The most accurate way to check them is with calipers.*

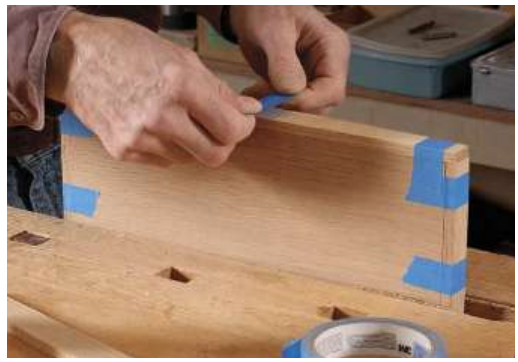
Veneer the core

Once the panel has been prepped, Coleman adds crossband veneers and then the edge-banding. After that's done, the panel is ready for the final show veneers.

Crossband comes first. *Veneer both sides of the panel, with the veneer's grain running perpendicular to the core. If you have to join several pieces of veneer to make this sheet, don't worry about perfect edge joints. This isn't a finished layer, so a few spots of glue and some blue tape for clamps will suffice.*



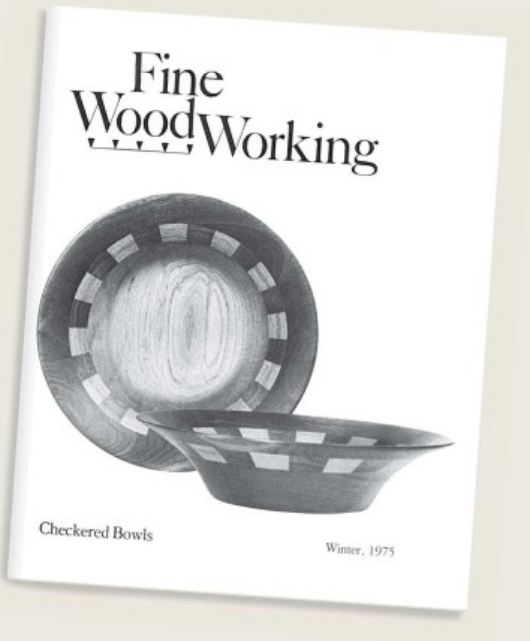
Bag it. *Clamp the veneer to the panel using a vacuum press. Leave the assembly in the bag for a few hours, then take it out and let it cure overnight. Stand it on edge to allow air to get at all sides.*



Band it. *After the assembly cures, trim the edges of the crossband veneer and apply the solid edge-banding to the core with yellow glue. Coleman uses blue tape as clamps for the job.*

Trim it. *Use a block plane to trim the edging flush. Then lightly sand the surfaces to remove any ridges in the crossband veneer seams. Now you're ready to apply the final face veneer to both sides.*

WOODWORKERS MART



Woodworking thoughts

SOME MUSINGS OF A DESIGNER-CRAFTSMAN-TEACHER

BY TAGE FRID

I have chosen to be a designer-craftsman. Most of my life I have concentrated on designing and working with wood only, and having spent more than 40 years with that one material, I am still learning through experimentation and looking for new techniques and forms.

The only trouble with designing and working in wood is that it has the advantage or disadvantage, however you look at it, of being beautiful in itself. It is not like metal; a piece of metal by itself is very cold and has to be hammered, shaped, and polished before people will even look at it. A piece of clay, which is really dirt, must be shaped, fired, and glazed. But take a piece of wood; plane, sand, and oil it, and you will find it is a beautiful thing. So actually, the more you do to it from then on, the worse it is going to get. Therefore, working with a material of such natural beauty, I feel that we have to design very quietly and use a simple form.

EDITOR'S NOTE

To help *Fine Woodworking* celebrate our 40th anniversary, we are reaching into our deep archives to reprint some classic articles. Here is Tage Frid's (1915-2004) first-ever article for the magazine, published in issue #1. Frid, a longtime professor of woodworking at Rhode Island School of Design (RISD) and an original contributing editor to the magazine, was a powerful influence on a number of preeminent woodworkers and teachers, many of whom wrote for *FWW*.

On being an apprentice

I was born in Denmark, so therefore my background for furniture design is a little different from that of most American furniture designers. That may be the reason that I view design from a slightly different angle, and feel strongly about the background that a furniture designer should have. I started as an apprentice in a cabinet maker's shop in Copenhagen when I was very young. Because I was not what you would call an outstanding student in school, I decided that the best thing for me to do was to serve an apprenticeship.

When you become an apprentice in Denmark, you sign a contract for five years, which is binding on both parties. Those were five of the longest years that I have ever spent! The working hours were from 7 a.m. to 5 p.m., six days a week. At night from 7 p.m. to 9 p.m., I was required to attend technical school, where drawing and a knowledge of the materials were taught. Salary for the five years was $1 a week and the guarantee that I would be a journeyman at the end of five years. I did not learn very much about design, but I did learn a good deal about wood as a material—its strength, its limitations, and how it is put together.

Vocational education

Today people look down on vocational education because it has not inherited the prestige of the past generation in America. In Europe, the craftsman enjoys the recognition he deserves. There should be an effort made to put more respect into vocational training. A student taking vocational training is just as intelligent as a student enrolled in a college program, the only difference is that the student does not want to be an academician. I think it is better to be a good craftsman and happy than to be a doctor or lawyer and unhappy just to satisfy mom and dad.

I think we have to start with the teachers of vocational subjects in high schools by giving them a better background. Instead of teaching them a little of each craft and having them become jack-of-all-trades, they should be taught one craft so that it is mastered and they can teach students in that particular field. I think also that they should be furnished with a better design background themselves in order to be able to guide the student in making his own design. Now if a student wants to make a coffee table, he is told to go to Drawer 3 and pick a design, usually from some popular magazine, which certainly does not help the student to understand good design. The student in a vocational school should be instructed in mechanical drawing, materials and processes, design and art history.

In schools today we like to expose students to a little bit of everything. I think it is a good thing for them to be exposed to various media, but it should be for a limited time only until they make up their minds about

which field they desire to enter. Educators today like to talk about the spiral where the student knows a little bit about everything before finally reaching perfection. I think it would be much better to turn the spiral upside-down and learn one thing well, and as you go on and improve, spread yourself out to other fields. However, I believe a student should make up his mind at an early point what will be his major and spend much more time in it. I'm afraid the teaching today where the student spends a few hours in one field and the next few hours in another only leads to confusion and he is unable to decide what he really wants to do.

Knowledge of materials

In 1948 I got off the banana boat and started teaching in the Crafts School. When I arrived at the school, the students and some of the teachers kept talking about the "freedom of the material." This sounded interesting and exciting to me, and I could hardly wait to find out what it was all about. It didn't take me long to find out when I started teaching. They did not have control of the material; so many of the things made were actually accidents.

I do not think that all furniture designers should be craftsmen first, but I certainly am convinced that the designer should know the material in which he is going to design. I really do not see how a designer can go in cold and design something in a material about which he has no knowledge, as it is extremely difficult even for a professional to switch from one material to another and do a good job.

Design and construction

If you combine technique and knowledge of the material, you certainly should be able to make some interesting and beautiful furniture—because if you have this background, you will automatically design around the construction, and not construct around the design. You will combine the two of them, as construction becomes second nature when you are designing. I am sorry to say that many times a different approach is used, and that is to construct around the design. Many students and designers are so worried about the looks and the sculpture of the piece, they first think about the beauty of the piece and later worry about how it is to be put together. I strongly believe that this is definitely the wrong approach to take when you are designing furniture. When people buy furniture, they are very particular, and want a chair that they can sit in and a bed they can sleep in. A customer may, for example, buy a sterling coffee pot that will tarnish and not be safe to operate—to show that he can afford expensive items or for whatever personal reason. He may buy a vase for its beauty even though it may have a crack in it. But when he is buying furniture, he wants something he can use. It is very hard to design furniture because somehow it has to fit the contours of the body which haven't changed much since time began.

Working with a material of such natural beauty, I feel that we have to design very quietly and use a simple form.

Furniture

I feel that furniture should be in proportion to the size of the buyer and reflect his own personality. I don't think that anything can make a small person look more ridiculous—and perhaps make him feel smaller—than disappearing into an oversized, upholstered chair; or the reverse of a large person sitting in a delicate chair in which the chair disappears, and the person seems to be sitting on four legs. Furniture should be proportioned to the person who uses it. There are certain requirements a chair must have when you design it. It should be designed so that it looks inviting to sit on, and when you do sit on it, the chair legs should not spread. You should be able to sit in it in various positions, and it should be able to take the weight of a person under stress circumstances.

I feel that the arms are too low in most arm chairs, and your arms are forced into your body—not very comfortable on a warm, sticky day. The arms on a chair should be high enough so that when you are reading, your arms can be at rest, holding the reading material at the proper distance. In this

Photo, this page: Paul Roselli

position, you will be more comfortable and the air can flow around the body as necessary.

The furniture I have been talking about is the more functional type, but there are others: For instance, the type that you are supposed to "discover." A few designers and craftsmen could make this type, but you could not start an industry based on it. A designer-craftsman would design this type of furniture because it would be so personalized that it would be impossible to make a working drawing, or to get anyone else to make it; but it would be very refreshing to have a few pieces of this furniture in your home. A limited number would be fine, because I don't want to spend half of my time trying to discover where I am going to sit in my own home. I am in favor of individualized furniture, do them quite often myself and encourage my students to do so. It is fun to make a piece of sculpture which you may also sit on. When I talk about chairs, there is something that has always puzzled me. What happened was that in the beginning, we were all sitting on the ground. Later on, some people who were more important were offered stones to rest upon. These were found to be too hard, and a piece of wood was substituted. Usually the important people in those days were the elderly, so then backs were added and armrests. Then, in order to make it moveable, it had to be lightened, and this process has gradually become a chair. So now, of course, we are all important, and therefore all sitting on chairs! What happened to the rest of the world, like China and Japan? They are still sitting on the floor, and I'm sure they are just as important as we are. I don't want to go deeper into the history of the chair, but it is strange that half of the world is sitting on chairs and the other half is still sitting on the floor.

Many people think that the craftsman makes everything by hand. Of course, he does not. He is taking advantage of all the machines and techniques that are available.

Designer-craftsmen

If you study the older furniture designers, you will find that they were craftsmen and they all designed around the construction. For that reason we still enjoy their furniture today, and it mixes very well with well-designed contemporary furniture. The good furniture designer of today uses the same techniques and those pieces will later become the classical furniture. But, in many cases, the designs are copies, and in cutting costs, shortcuts are made, and this is how we have some of the miscarries we have today. Of course, I am fully aware of the high cost of material and labor, and the shortage of skilled labor which has a big influence on today's designs. But I still don't believe an inexpensive piece of furniture has to look cheap. The disappearance of the designer-craftsman was one of the prices we had to pay here in America for having mass-production. In Europe, they are specializing also, and a decline in the crafts field is noticeable. But it does not mean that it is dying. We don't need the large numbers we once had because of the machines.

Many people think that the craftsman makes everything by hand. Of course, he does not. He is taking advantage of all the machines and techniques that are available. Some people think it is "wonderful" that something is made "by hand." I don't care how it is made—he can make it with his feet or a machine—it is still the final product that counts. A craftsman is very flexible and it does not cost much to switch from one design to another; therefore he is able to combine the machine and hand work to get more individual pieces. Even in a small production line, each piece can still have its own individuality. Pricewise, I think a designer-craftsman can compete with factory-made furniture for the reason that people usually go directly to him, and the dealer's in-between costs are cut. Without the tremendous overhead the factory carries, the price will be pretty close to what a factory-made piece of the same quality would cost.

So I believe that there is a great opportunity and a great need for designer-craftsmen today, and that most clients are looking for something with a more personal touch and of better quality than is available. □

Photo, this page: Susan Kahn

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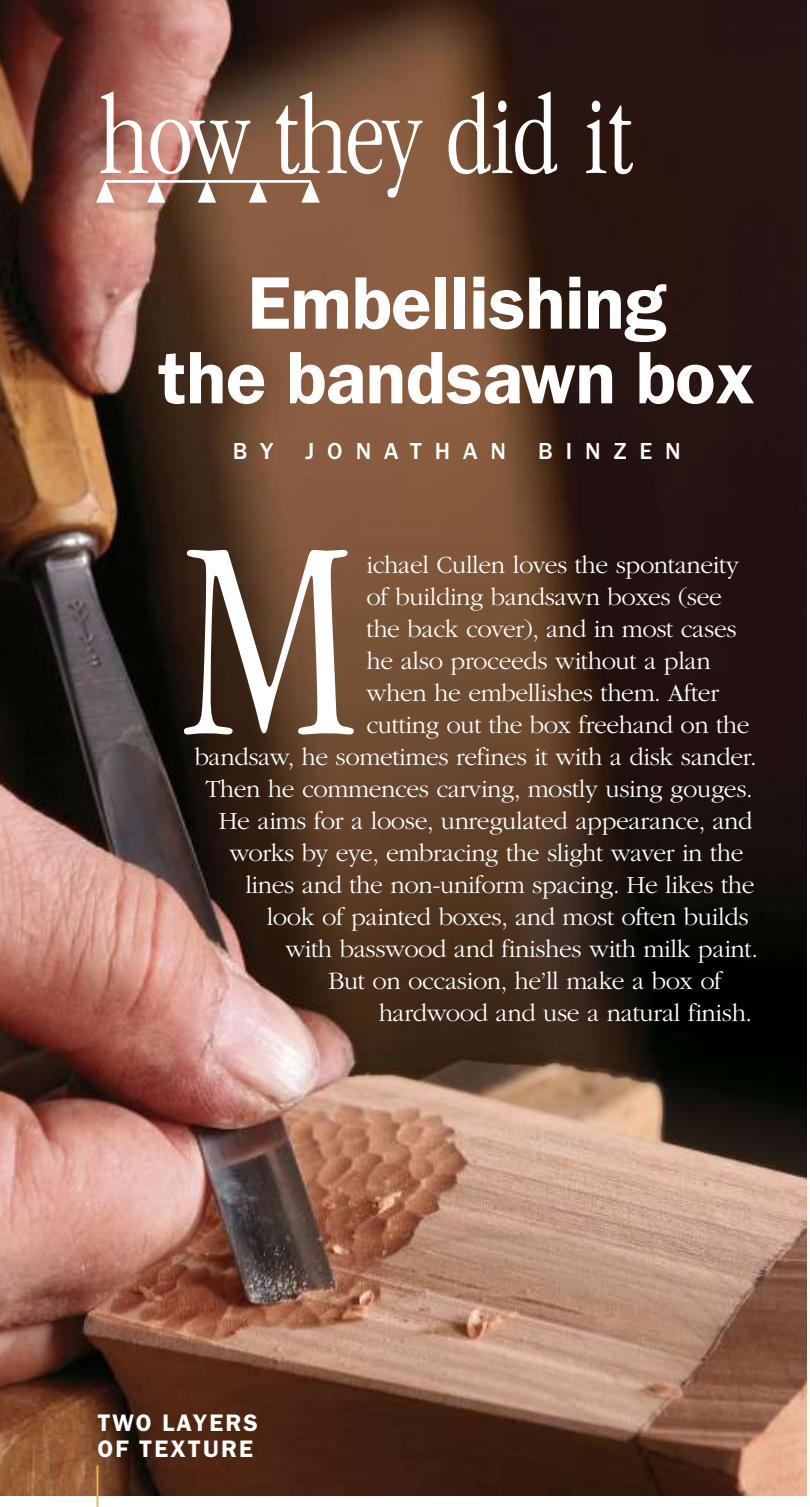
INDEX TO ADVERTISERS

how they did it

Embellishing the bandsawn box

BY JONATHAN BINZEN

Michael Cullen loves the spontaneity of building bandsawn boxes (see the back cover), and in most cases he also proceeds without a plan when he embellishes them. After cutting out the box freehand on the bandsaw, he sometimes refines it with a disk sander. Then he commences carving, mostly using gouges. He aims for a loose, unregulated appearance, and works by eye, embracing the slight waver in the lines and the non-uniform spacing. He likes the look of painted boxes, and most often builds with basswood and finishes with milk paint. But on occasion, he'll make a box of hardwood and use a natural finish.



TWO LAYERS OF TEXTURE

Double-gouged surface. *For this cherry box, Cullen first used a shallow gouge (above) to create an allover pattern of shallow scoops. Then with a veining gouge and a twisting action, he covered the box with hundreds of tiny dimples (right).*

CARVINGS ON A CURVED LID

Fair, then groove. *To create a pattern like the one on the lid of the box below, Cullen first fairs the bandsawn top face of the dished lid with a very shallow gouge (above). He then adds grooves across the grain, carving quickly and following rough pencil lines (left). Dispensing with perfect regularity and symmetry, Cullen achieves instead an effect as personal as handwriting. The cutoffs produced while bandsawing the outside of the box to shape provide perfect cauls to hold the box in the vise.*

Milk paint makes a bold statement. *Cullen often applies several colors in layers. Once the upper coat dries, he abrades the surface with sandpaper, bringing the undercoat into view on the high spots. Then he adds light coats of shellac and wax.*

Photos: Jonathan Binzen (top three); John Tetreault (bottom two)

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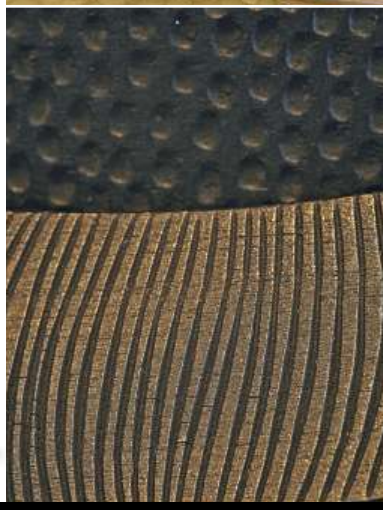
Michael Cullen, who attended a demanding program in traditional European-style furniture making,

always envied potters and glass blowers for the speed and spontaneity of their work. He loved the idea of conceiving a form on the fly and seeing it materialize in moments. "But nothing happens fast in furniture," he says. The craft prizes planning, patience, and methodical exactitude, and

Bandsawn Beauty

Cullen has spent three decades displaying those virtues while building refined and complex furniture. But somewhere along the way he discovered that his bandsaw could turn a small scrap of wood into a beautiful box in a few hours. No drawing, no joinery, no measuring. Just a little freehand bandsaw work, a seamless glue-up, and the box was ready for any carved or painted detail he wanted to add. No need to envy anyone now.

—Jonathan Binzen



Photos: Jonathan Binzen

How They Did It Turn to p. 98 to see how Cullen decorates his boxes. For an article on how to build them, see pp. 60-65.

Cullen describes his work in an exclusive audio slide show.